

Course Material

Power BI

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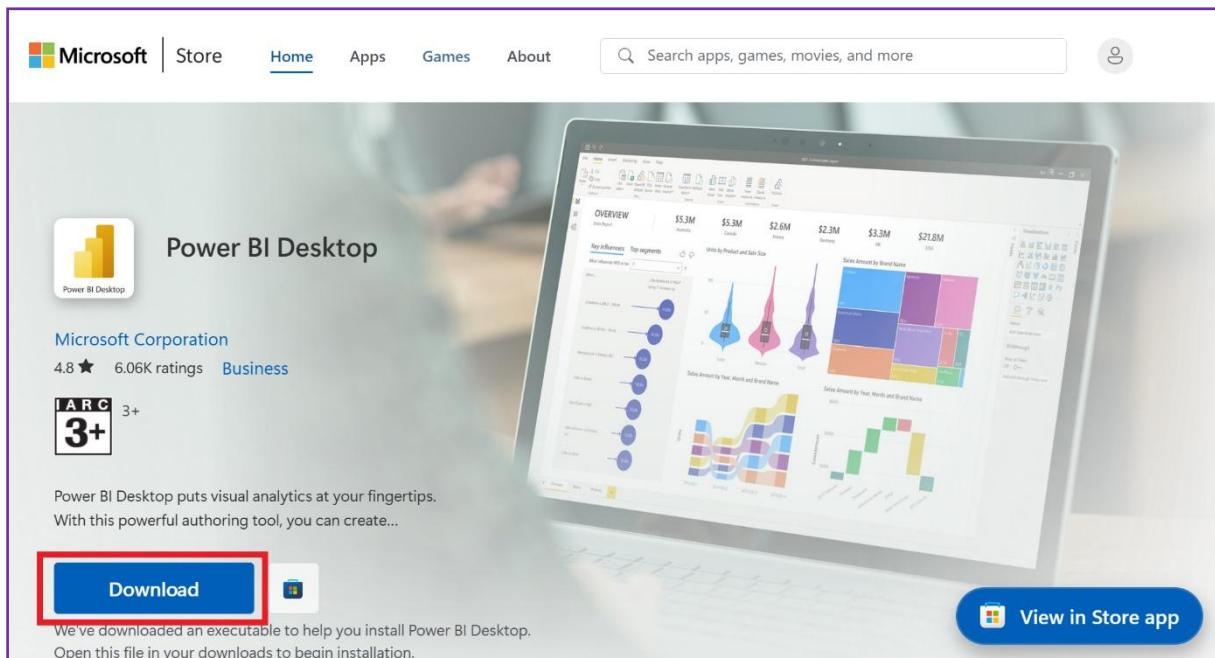
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Installation

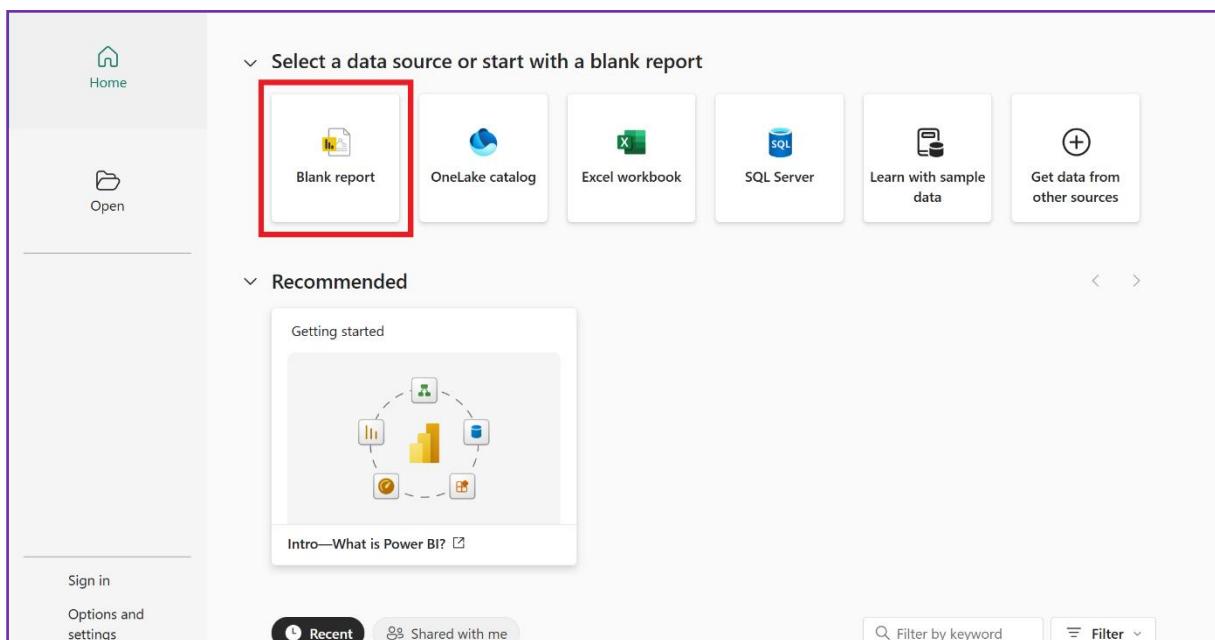
Sign Up/Log In:

1. Download and install the Power BI Desktop application from the Microsoft Store.

<https://apps.microsoft.com/detail/9NTXR16HNW1T?hl=en-us&gl=IN&ocid=pdpshare>

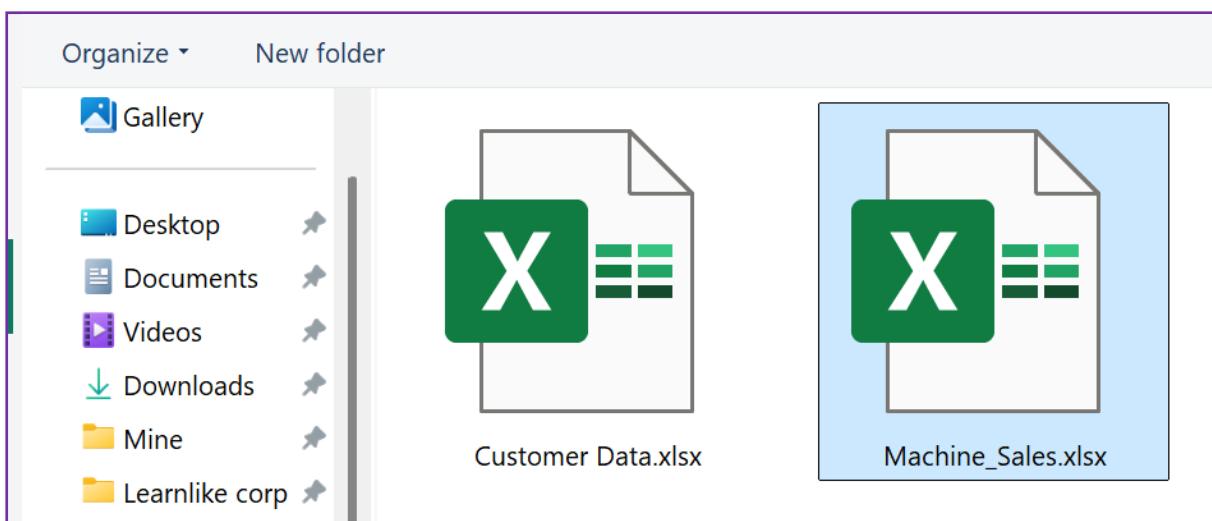
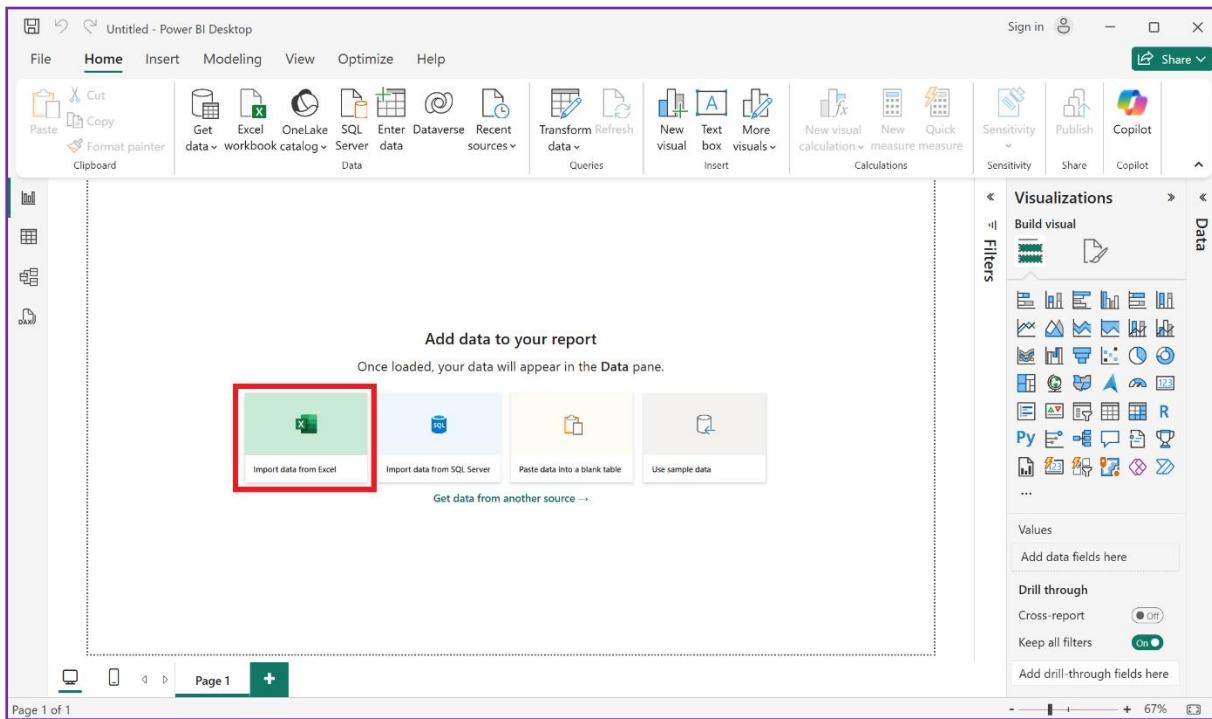


2. Launch Power BI Desktop after installation. To create a new report, click on **Blank Report**.



Power BI – User Guide

1. Download the [Power BI](#) folder from the shared Google Drive folder.
2. Click on **Import data form Excel** and upload the [Machine_Sales.xlsx](#) file into Power BI Desktop.



3. Select the sheets you want to upload and click on **Load** to import the data into Power BI.

Navigator

Display Options ▾

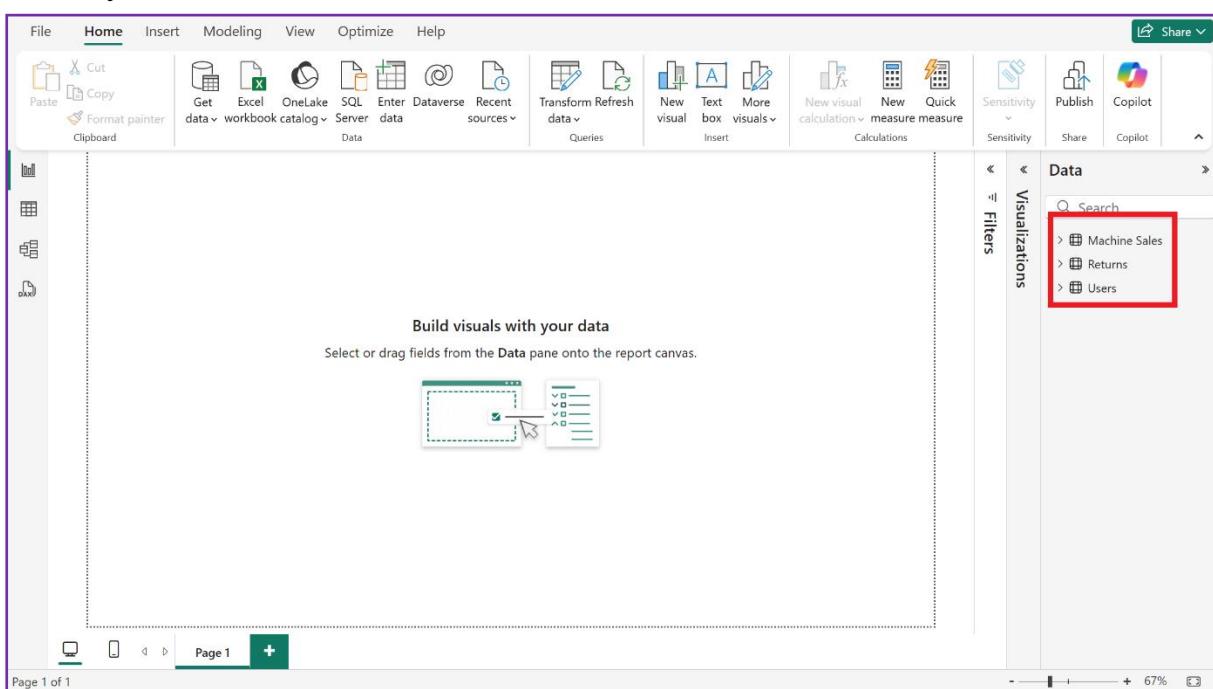
- Machine_Sales.xlsx [3]
 - Machine Sales
 - Returns
 - Users

Users
Preview downloaded on 24 March 2025

Column1	Column2
Region	Manager
Central	Deepak
East	Priya
South	Amit
West	Amit

Load Transform Data Cancel

4. The selected data will be loaded into Power BI and will be available for analysis.

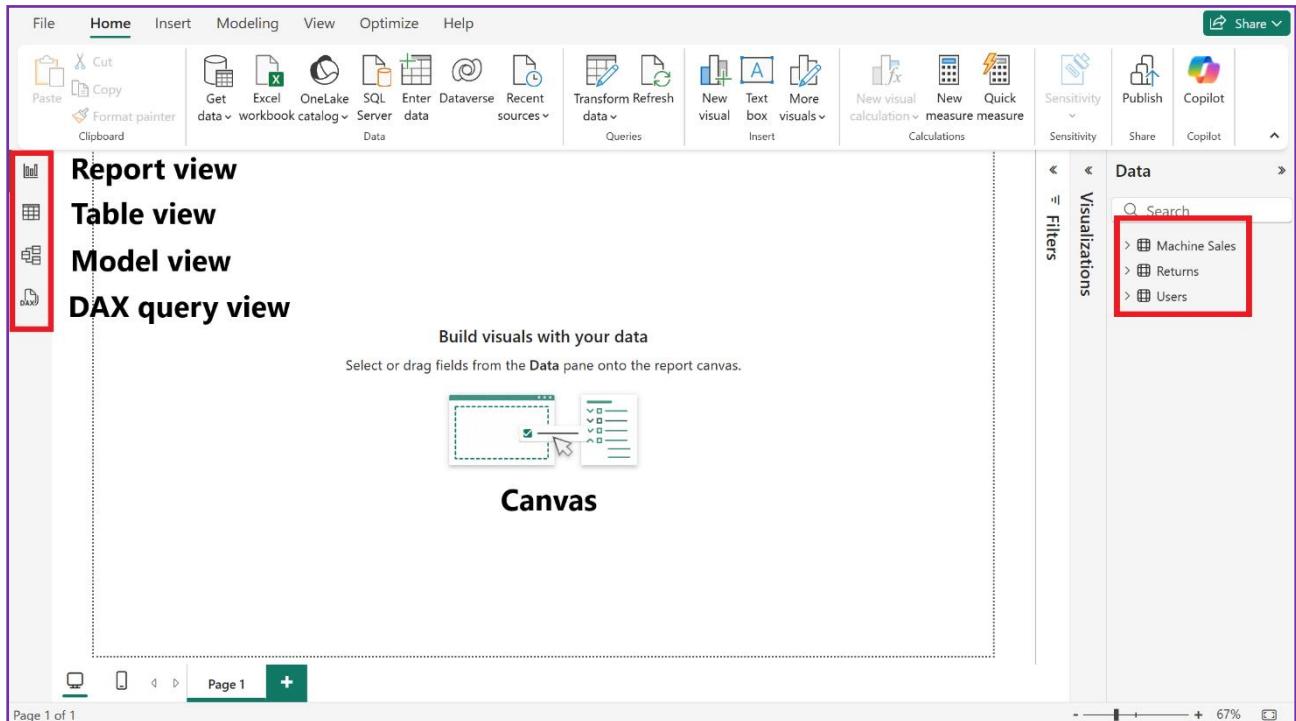


The screenshot shows the Power BI Desktop interface. The ribbon at the top has the "Home" tab selected. The "Data" pane on the left shows a connection to "Machine_Sales.xlsx" with three items: "Machine Sales", "Returns", and "Users". The "Visualizations" pane on the right shows three items under "Data": "Machine Sales", "Returns", and "Users", all of which are highlighted with a red box. The center canvas area is currently empty, with the text "Build visuals with your data" and "Select or drag fields from the Data pane onto the report canvas." The bottom status bar shows "Page 1 of 1" and a zoom level of "67%".

Views

Power BI Desktop includes four default views: **Report view** for chart visualization, **Table view** for data manipulation, and **Model view** for managing data relationships. Additionally, there is a **DAX query view** for advanced calculations. The center area

of the Power BI interface is called the **Canvas**, where visualizations and reports are created and arranged.

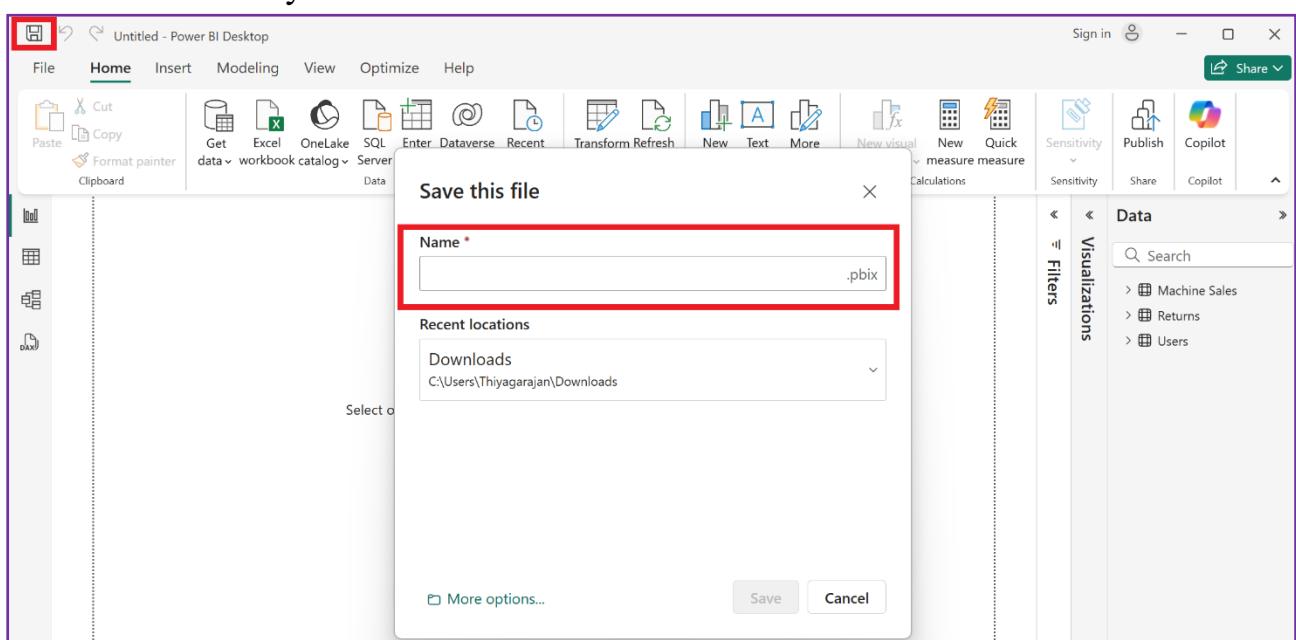


File formats

The default save format in Power BI is **.pbix**. Additionally, there are two other formats:

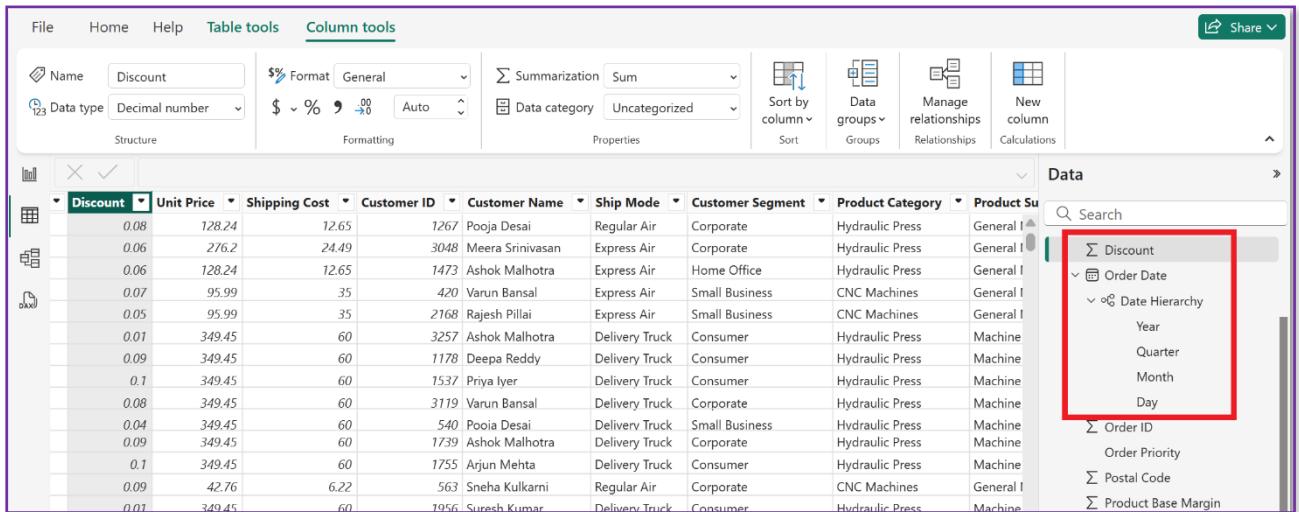
.pbet – A template file for pre-built reports or dashboards, used as a starting point for new reports.

.pbip – A format designed for organizing and managing multiple reports and dataflows efficiently.



Data segregation (Default)

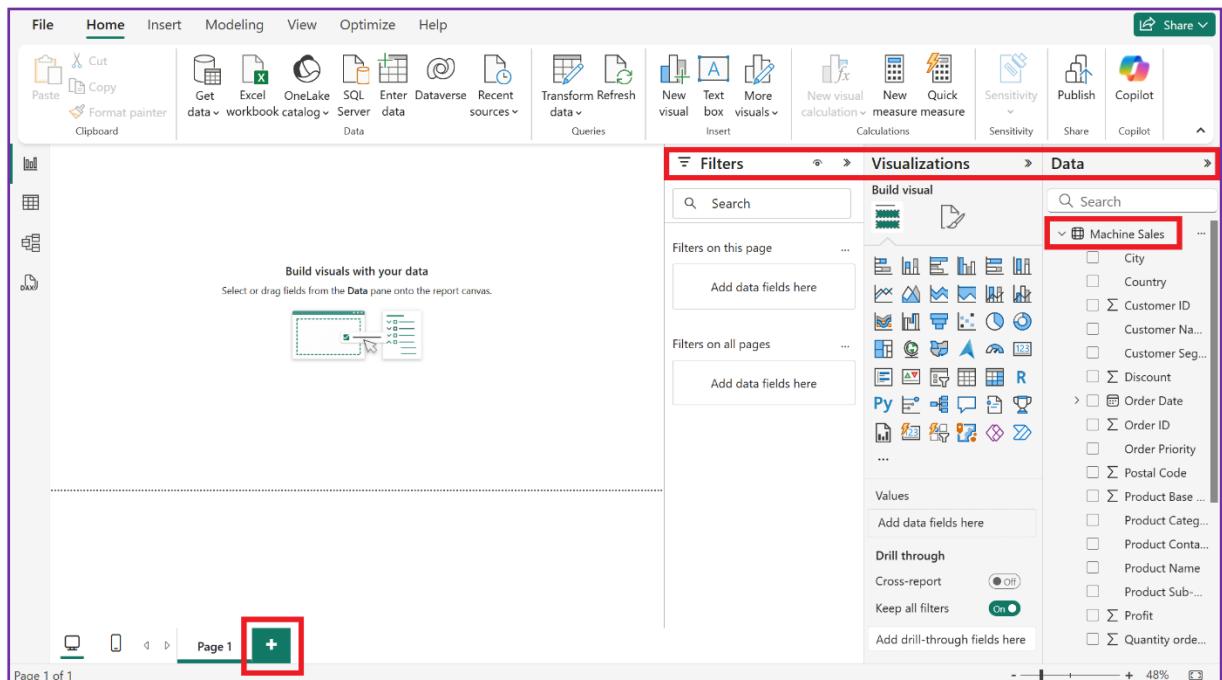
Power BI automatically categorizes data when it's imported. Columns with a summation symbol are recognized as numerical data, while columns with a calendar icon are recognized as date fields. Dates are, by default, added to a hierarchy in Power BI, which includes levels for Year, Quarter, Month, and Day. This hierarchy helps in performing time-based analysis easily.



The screenshot shows the Power BI Data view. A table of sales data is displayed with columns: Discount, Unit Price, Shipping Cost, Customer ID, Customer Name, Ship Mode, Customer Segment, Product Category, and Product Sub. The 'Discount' column is selected. A context menu is open over this column, with the 'Summarization' section expanded. Under 'Summarization', 'Sum' is selected. Other options include 'Count', 'Min', 'Max', 'Avg', and 'StdDev'. The context menu also includes sections for 'Format', 'General', 'Data category', 'Uncategorized', 'Sort by column', 'Data groups', 'Manage relationships', and 'New column'.

Pages & other features

1. Pages can be added on by clicking + New page at the bottom. **Filters & Visualizations** options are available. Click on each data sheet to expand and see all the column details.



The screenshot shows the Power BI Report view. On the left, there is a report canvas with a placeholder message 'Build visuals with your data'. On the right, the ribbon is visible with 'Home' selected. The 'Filters' pane is open, showing sections for 'Filters on this page' and 'Filters on all pages', both with 'Add data fields here' buttons. The 'Visualizations' pane is also open, showing various visualization icons. The 'Data' pane on the far right lists data fields under categories like 'Machine Sales', 'Order Date', and 'Product Base Margin'. A green box highlights the '+ New page' button at the bottom of the report canvas.

2. Go to **Table view** and click on any column to view its details at the bottom of the screen.

File Home Help Table tools Column tools

Name Order Priority Data type Text Summarization Don't summarize Data category Uncategorized Sort by column Sort Groups Manage relationships New column Calculations

Structure Formatting Properties

Data

Search

Machine Sales

City

Country

Customer ID

Customer Name

Customer Segment

Discount

Order Date

Order ID

Order Priority

Postal Code

Product Base Margin

Product Category

Product Container

Product Name

Product Sub-Category

Profit

Quantity ordered new

Row ID	Order Priority	Discount	Unit Price	Shipping Cost	Customer ID	Customer Name	Ship Mode	Customer Segment	Prod
15	Low	0.06	122.99	19.99	2382	Sneha Kulkarni	Regular Air	Small Business	CN
44	Critical	0.01	205.99	19.99	68	Varun Bansal	Regular Air	Corporate	La
44	Critical	0.09	162.93	19.99	68	Meera Srinivasan	Regular Air	Corporate	CN
44	Medium	0.01	162.93	19.99	640	Anita Nair	Regular Air	Consumer	CN
56	Not Specified	0.02	1270.99	19.99	1733	Sanjay Patil	Regular Air	Small Business	CN
79	Not Specified	0.01	99.99	19.99	1413	Suresh Kumar	Regular Air	Corporate	La
99	High	0.03	896.99	19.99	2867	Manoj Joshi	Regular Air	Corporate	CN
104	Critical	0.06	49.99	19.99	3011	Ramesh Choudhary	Regular Air	Corporate	La
122	Low	0.1	40.48	19.99	698	Rajesh Pillai	Regular Air	Corporate	La
152	Not Specified	0.05	122.99	19.99	3106	Sneha Kulkarni	Regular Air	Home Office	CN
155	Low	0.09	49.99	19.99	1193	Karthik Subramaniam	Regular Air	Small Business	La
184	High	0.05	420.98	19.99	2403	Sanjay Patil	Regular Air	Consumer	CN
213	Medium	0.07	1270.99	19.99	349	Pooja Desai	Regular Air	Home Office	CN
233	High	0	65.99	19.99	3342	Neha Gupta	Regular Air	Home Office	La
307	High	0	78.69	19.99	1745	Vikram Rao	Regular Air	Home Office	Hy
321	Medium	0.04	419.19	19.99	2491	Rahul Verma	Regular Air	Home Office	CN
352	Critical	0.04	420.98	19.99	2882	Rahul Verma	Regular Air	Consumer	CN
425	Medium	0.06	193.17	19.99	607	Deepa Reddy	Regular Air	Corporate	CN
441	Critical	0.03	95.43	19.99	2498	Manoj Joshi	Regular Air	Small Business	CN
482	Critical	0.03	99.99	19.99	3196	Deepa Reddy	Regular Air	Home Office	La
489	Critical	0.07	419.19	19.99	2107	Anita Nair	Regular Air	Home Office	CN
523	Low	0.1	49.99	19.99	3075	Vikram Rao	Regular Air	Corporate	La

Table: Machine Sales (9,426 rows) Column: Order Priority (5 distinct values)

Get data from Database

Go to Home → Get data → More → Database → Access database and click on Connect. Select **Northwind.accdb** from the Power BI folder and click Open. Choose Select Related Tables and then Load the data into Power BI.

File Home Help Table tools Column tools

Cut Copy Get data from workbook catalog Recent sources Transform Refresh data Manage relationships New measure New table Manage roles View as Sensitivity Share

Clipboard Common data sources

Power BI semantic models Dataflows Dataverse Data Datasource Relationships New table Security

Power BI Template Apps

More...

Connect to data from multiple sources.

Search

Machine Sales

City

Country

Customer ID

Customer Name

Customer Segment

Discount

Order Date

Order ID

Order Priority

Postal Code

Product Base Margin

Product Category

Product Container

Product Name

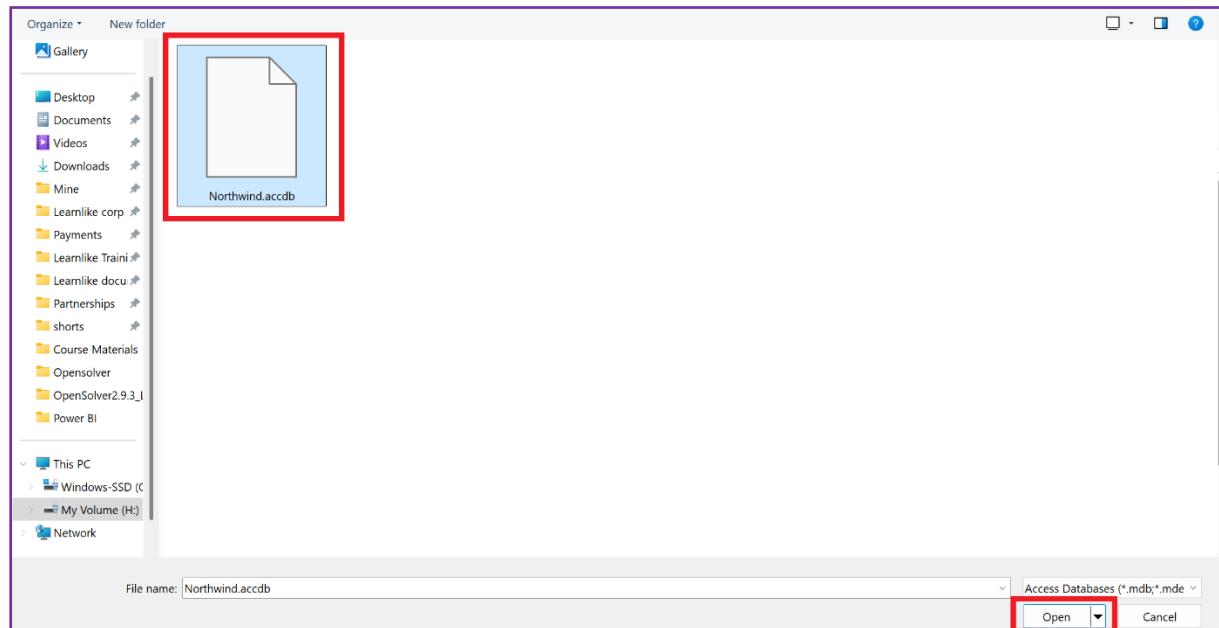
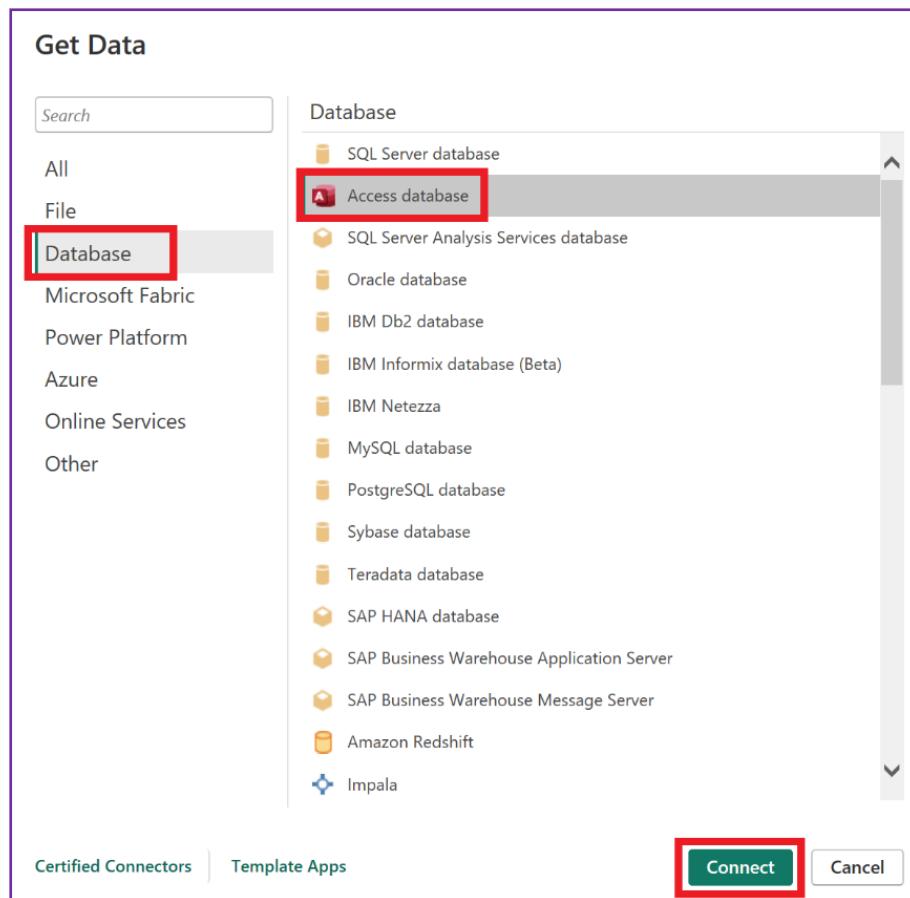
Product Sub-Category

Profit

Quantity ordered new

Row ID	Price	Shipping Cost	Customer ID	Customer Name	Ship Mode	Customer Segment	Prod
122.99	19.99	2382	Sneha Kulkarni	Regular Air	Small Business	CN	
205.99	19.99	68	Varun Bansal	Regular Air	Corporate	La	
162.93	19.99	68	Meera Srinivasan	Regular Air	Corporate	CN	
162.93	19.99	640	Anita Nair	Regular Air	Consumer	CN	
1270.99	19.99	1733	Sanjay Patil	Regular Air	Small Business	CN	
99.99	19.99	1413	Suresh Kumar	Regular Air	Corporate	La	
896.99	19.99	2867	Manoj Joshi	Regular Air	Corporate	CN	
49.99	19.99	3011	Ramesh Choudhary	Regular Air	Corporate	La	
40.48	19.99	698	Rajesh Pillai	Regular Air	Corporate	La	
122.99	19.99	3106	Sneha Kulkarni	Regular Air	Home Office	CN	
49.99	19.99	1193	Karthik Subramaniam	Regular Air	Small Business	La	
420.98	19.99	2403	Sanjay Patil	Regular Air	Consumer	CN	
1270.99	19.99	349	Pooja Desai	Regular Air	Home Office	CN	
65.99	19.99	3342	Neha Gupta	Regular Air	Home Office	La	
78.69	19.99	1745	Vikram Rao	Regular Air	Home Office	Hy	
419.19	19.99	2491	Rahul Verma	Regular Air	Home Office	CN	
1270.99	19.99	2882	Rahul Verma	Regular Air	Consumer	CN	
99.99	19.99	607	Deepa Reddy	Regular Air	Corporate	CN	
95.43	19.99	2498	Manoj Joshi	Regular Air	Small Business	CN	
99.99	19.99	3196	Deepa Reddy	Regular Air	Home Office	La	
419.19	19.99	2107	Anita Nair	Regular Air	Home Office	CN	
0.1	19.99	3075	Vikram Rao	Regular Air	Corporate	La	

Table: Machine Sales (9,426 rows) Column: Order Priority (5 distinct values)



Navigator

Display Options ▾

- Product Orders
- Product Sales by Category
- Product Sales Qty by Employee and Da...
- Product Sales Total by Date
- Products on Back Order
- Shippers Extended
- Suppliers Extended
- Top Ten Orders by Sales Amount
- ~TMPCLP165201
- ~TMPCLP301921
- ~TMPCLP308951
- ~TMPCLP510351
- ~TMPCLP79421
- Customers
- Employees
- Order Details
- Orders
- Products
- Shippers
- Suppliers

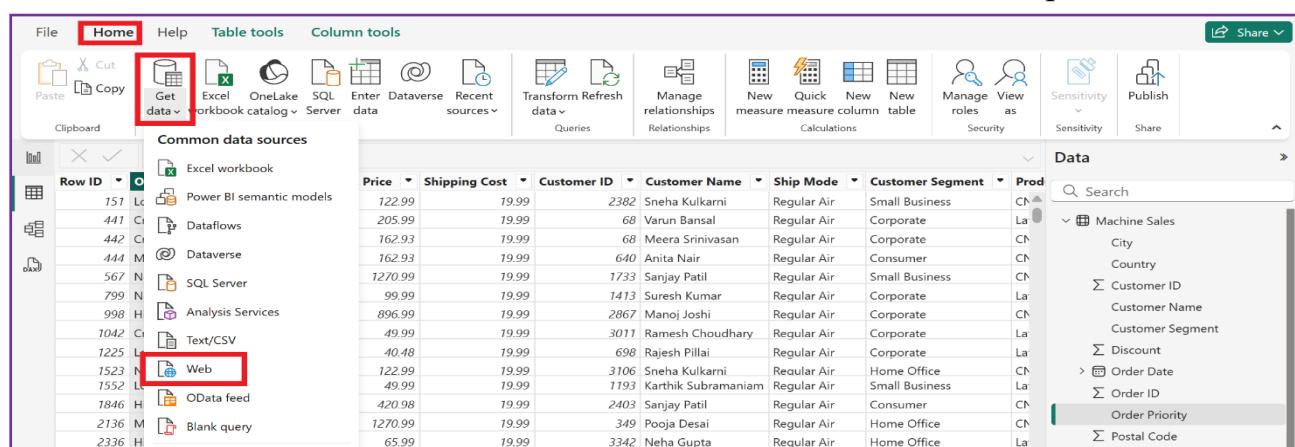
Products
Preview downloaded on 23 March 2025

ID	Product Code	Product Name	Description
1	NWTB-1	Northwind Traders Chai	
3	NWTCO-3	Northwind Traders Syrup	
4	NWTCO-4	Northwind Traders Cajun Seasoning	
5	NWTO-5	Northwind Traders Olive Oil	
6	NWTJP-6	Northwind Traders Boysenberry Spread	
7	NWDFN-7	Northwind Traders Dried Pears	
8	NWTS-8	Northwind Traders Curry Sauce	
14	NWDFN-14	Northwind Traders Walnuts	
17	NWCFV-17	Northwind Traders Fruit Cocktail	
19	NWTBGM-19	Northwind Traders Chocolate Biscuits Mix	
20	NWTJP-6	Northwind Traders Marmalade	
21	NWTBGM-21	Northwind Traders Scones	
34	NWTB-34	Northwind Traders Beer	
40	NWTCM-40	Northwind Traders Crab Meat	
41	NWTSO-41	Northwind Traders Clam Chowder	
43	NWTB-43	Northwind Traders Coffee	
48	NWTCB-48	Northwind Traders Chocolate	
51	NWDFN-51	Northwind Traders Dried Apples	
52	NWTG-52	Northwind Traders Long Grain Rice	
56	NWTP-56	Northwind Traders Gnocchi	
57	NWTP-57	Northwind Traders Ravioli	
65	NWTS-65	Northwind Traders Hot Pepper Sauce	

Select Related Tables Load Transform Data Cancel

Get data from Web

Go to Home → Get data → Web. Enter the web URL (e.g., https://en.wikipedia.org/wiki/List_of_U.S._states_and_territories_by_income) and click OK. Select the desired tables and then click Load to import the data.



The screenshot shows the Microsoft Power BI desktop interface. The ribbon is at the top with the 'Home' tab selected. Under the 'Get data' tab in the ribbon, there is a 'Web' option highlighted with a red box. The main area displays a table of customer data with columns like Row ID, Price, Shipping Cost, Customer ID, Customer Name, Ship Mode, Customer Segment, and Product. To the right of the table, there is a 'Data' pane showing various data types such as Machine Sales, City, Country, Customer ID, Customer Name, Customer Segment, Discount, Order Date, Order ID, Order Priority, and Postal Code. At the bottom right of the ribbon, there is a 'Load' button also highlighted with a red box.

From Web

Basic Advanced

URL

OK **Cancel**

Navigator

Display Options ▾

- HTML Tables [8]
 - Table 1
 - States and territories ranked by median h...
 - Table 2
 - Household income percentiles for U S stat...
 - Table 3
 - Table 4
 - Table 5
 - Table 6
- Suggested Tables [7]
 - Table 7
 - Table 8
 - Table 9
 - Table 10
 - Table 11
 - Table 12
 - Table 13
- Text [2]
 - HTML Code
 - Displayed Text

Table View Web View

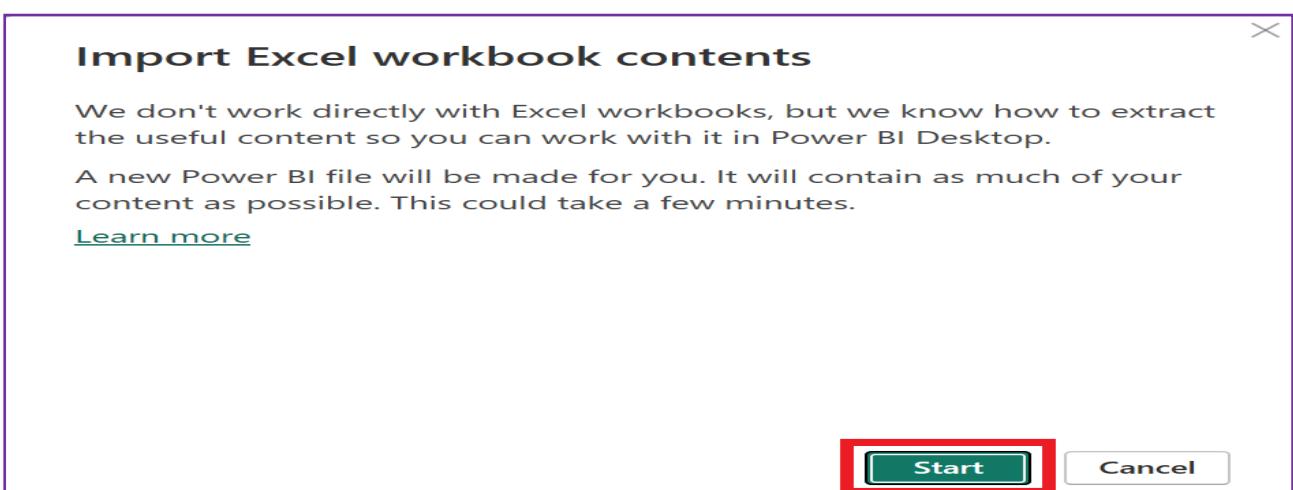
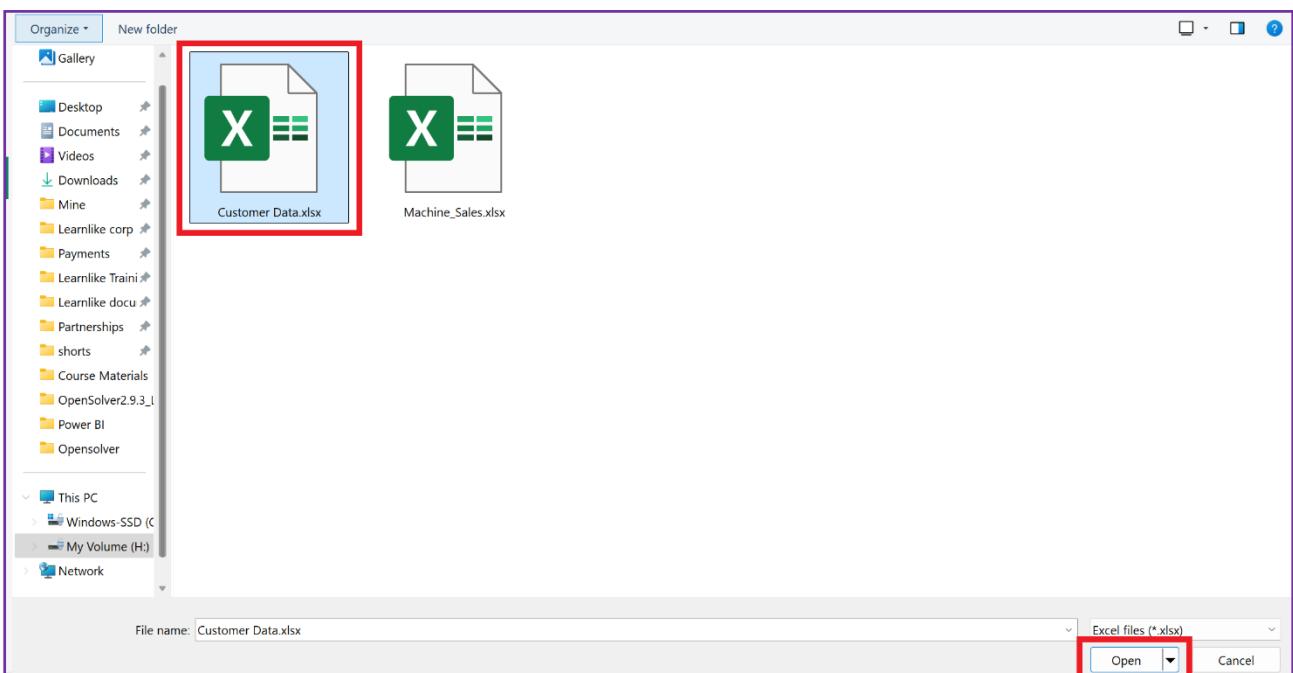
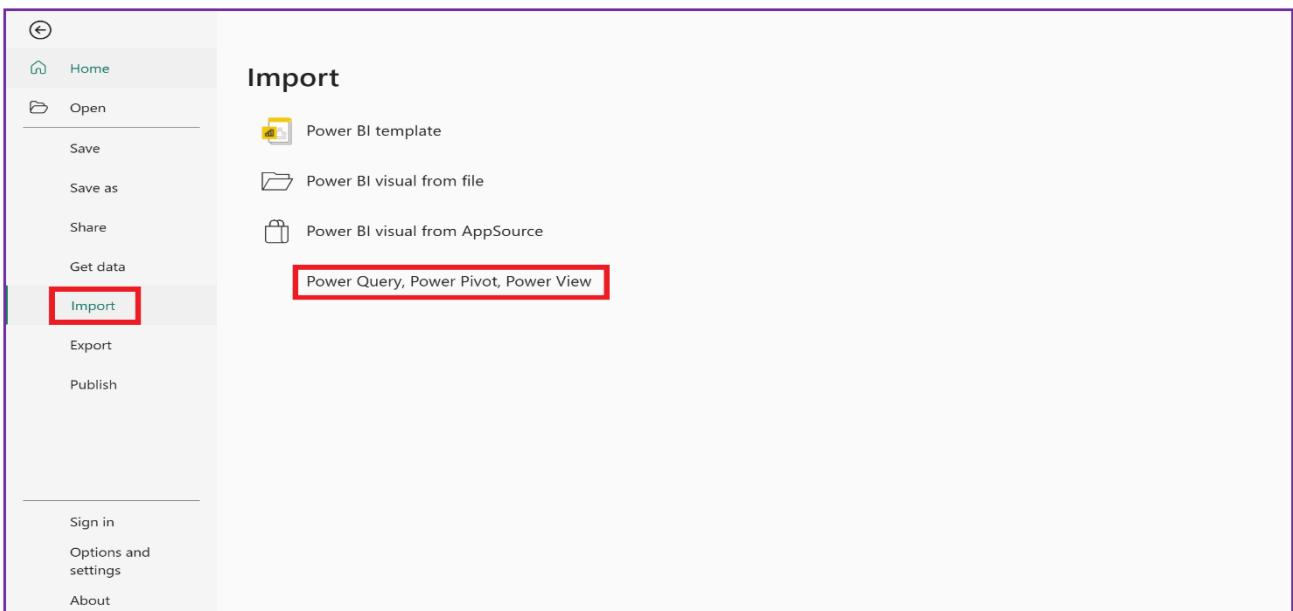
States and territories ranked by median household income

Column1	Column2	Column3	Column4	Column5
States and Washington, D.C.	2023	2022	2021	2019
United States	\$77,719	\$74,755	\$69,717	\$65,712
Washington, D.C.	\$108,210	\$101,027	\$90,088	\$92,266
Massachusetts	\$99,858	\$94,488	\$89,645	\$85,843
New Jersey	\$99,781	\$96,346	\$89,296	\$85,751
Maryland	\$98,678	\$94,991	\$90,203	\$86,738
New Hampshire	\$96,838	\$89,992	\$88,465	\$77,933
California	\$95,521	\$91,551	\$84,907	\$80,440
Hawaii	\$95,322	\$92,458	\$84,857	\$83,102
Washington	\$94,605	\$91,306	\$84,247	\$78,687
Utah	\$93,421	\$89,168	\$79,449	\$75,780
Colorado	\$92,911	\$89,302	\$82,254	\$77,127
Connecticut	\$91,665	\$88,429	\$83,771	\$78,833
Virginia	\$89,931	\$85,873	\$80,963	\$76,456
Alaska	\$88,121	\$86,631	\$77,845	\$75,463
Minnesota	\$85,086	\$82,338	\$77,720	\$74,593
Rhode Island	\$84,972	\$81,854	\$74,008	\$71,169
Delaware	\$82,174	\$81,361	\$71,091	\$70,176
New York	\$82,095	\$79,557	\$74,314	\$72,108
Vermont	\$81,211	\$73,991	\$72,431	\$63,001
Illinois	\$80,306	\$76,708	\$72,205	\$69,187

Add Table Using Examples **Load** Transform Data Cancel

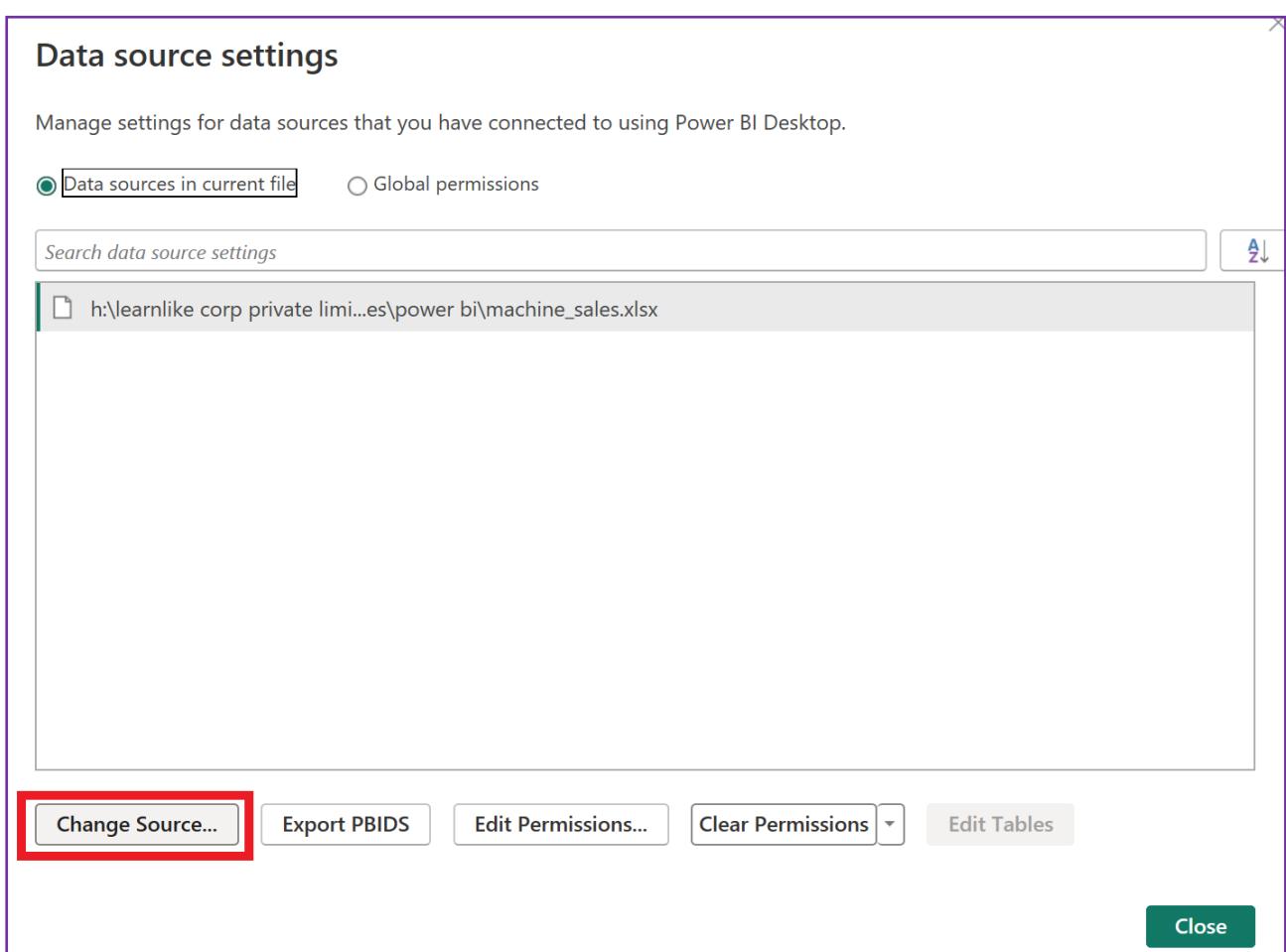
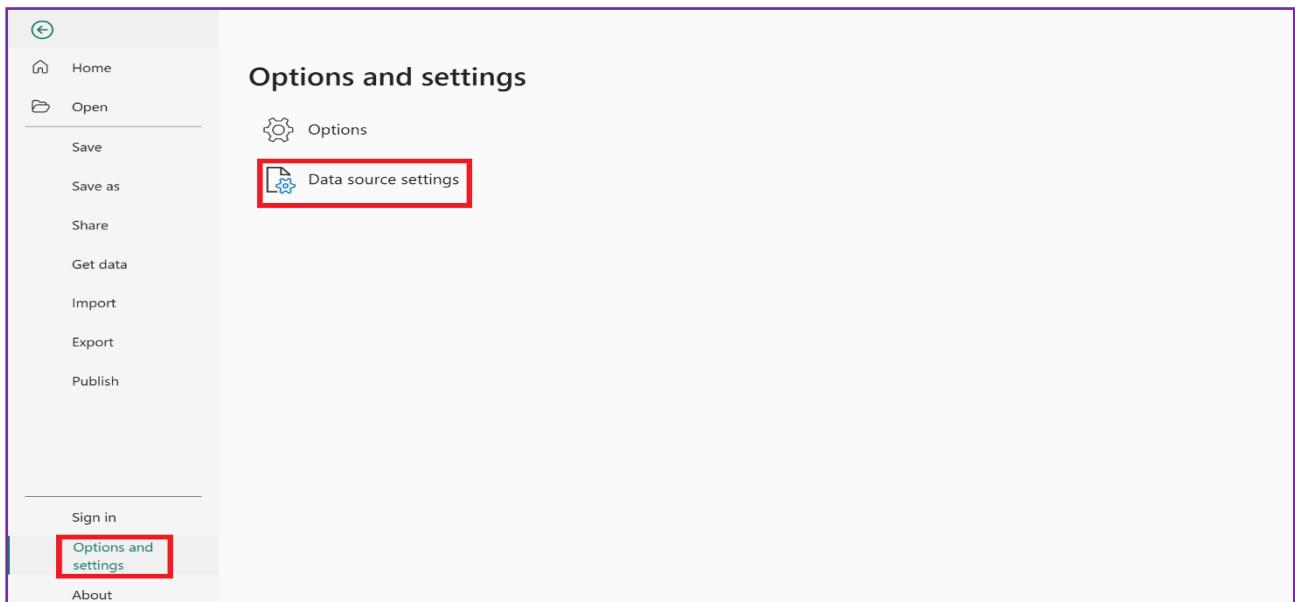
Import data

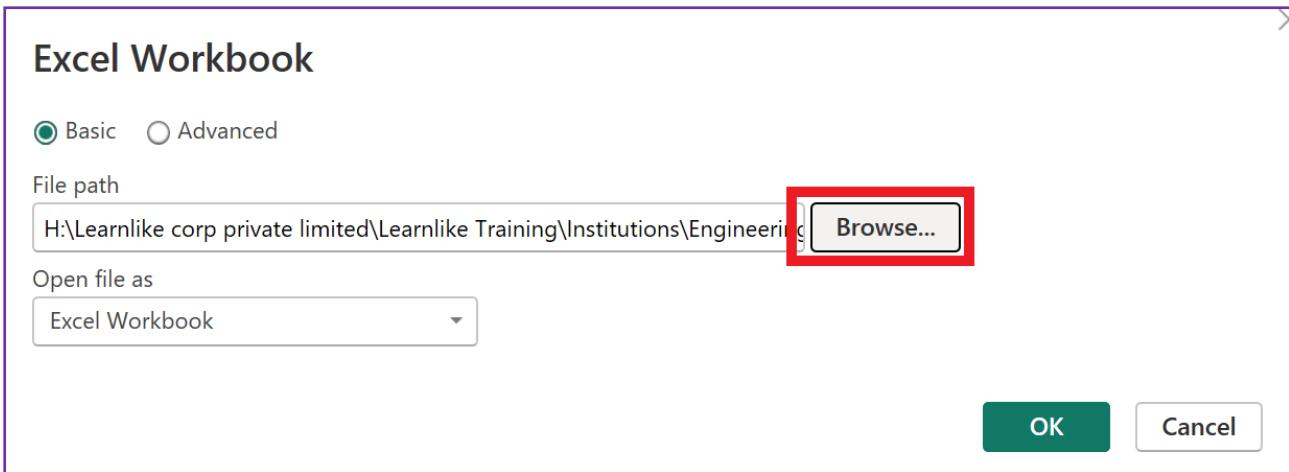
Go to **File → Import → Power Query, Power Pivot, Power View**, and choose the file **Customer Data.xlsx**. Click **Open**. Then, click **Start** to import the workbook contents. The **Import** option allows you to use the underlying raw data instead of pivot data.



Data source settings

Power BI data is always linked to the source file. If the source file is moved, Power BI visualizations will stop working. To update the source file path, go to **File → Options and settings → Data source settings**. Click on **Change source** and select the new location of the source file.





Refresh

The **Home → Refresh** option allows you to update any changes made to the data source into Power BI, ensuring that your report reflects the most current data.

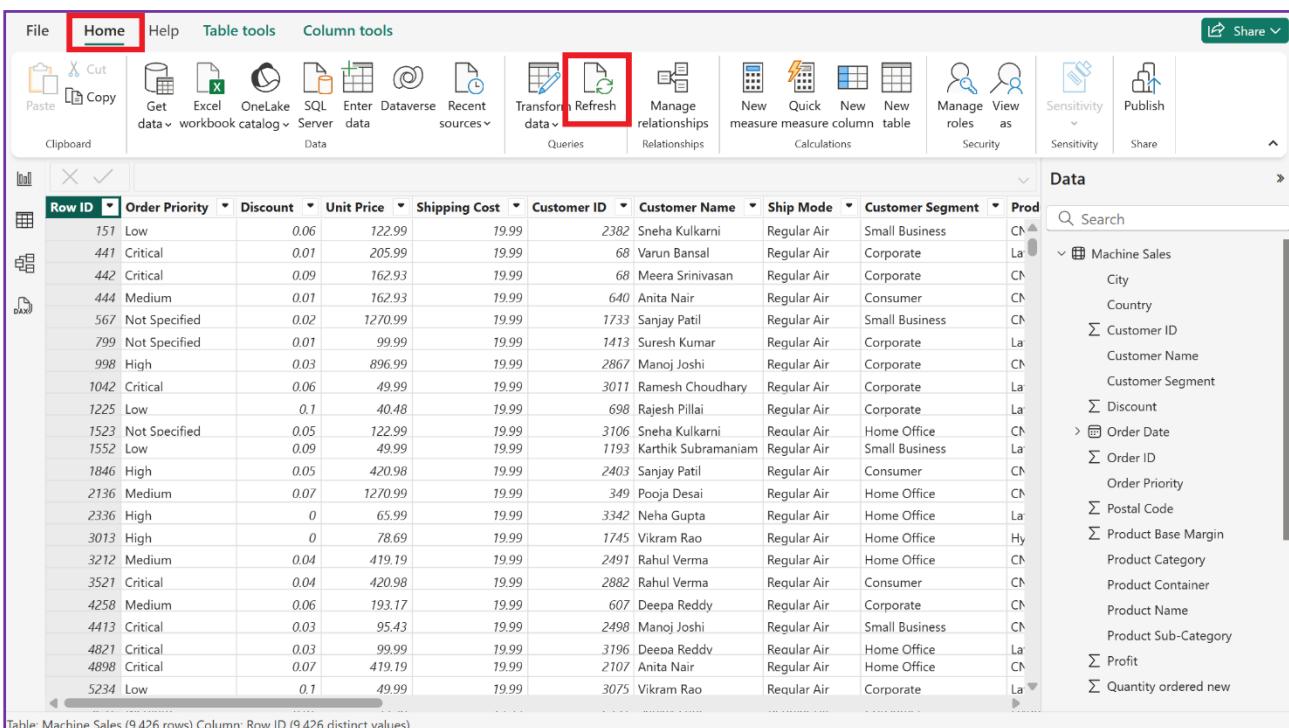


Table: Machine Sales (9,426 rows) Column: Row ID (9,426 distinct values)

Rename Data Tables and Columns

Double-click on any column or data table to rename it, or right-click and select the **Rename** option from the context menu..

Untitled - Power BI Desktop

File Home Help Table tools

Name Machine Sales Test

Manage relationships New measure New measure column New table Mark as date table Calculations Calendars

Structure Relationships Data

Sort ascending Sort descending Clear sort Clear filter Clear all filters Copy New measure New column Refresh data Edit query Rename Delete Hide in report view Unhide all New group New row New column New table Manage roles as Security

Ship Mode Customer Segment Prod

Regular Air Consumer CN Regular Name Machine Sales Test Storage mode Import Data refreshed 1/4/2025, 12:37:21 pm

Regular Air Small Business CN Regular City

Regular Air Corporate LA Regular Country

Regular Air Corporate CN Regular Customer ID

Regular Air Corporate LA Regular Customer Name

Regular Air Home Office CN Regular Customer Segment

Regular Air Small Business LA Regular Discount

Regular Air Consumer CN Regular Order Date

Regular Air Home Office CN Regular Order ID

Regular Air Home Office LA Regular Order Priority

Regular Air Home Office HY Regular Postal Code

Regular Air Consumer CN Regular Product Base Margin

Regular Air Corporate CN Regular Product Category

Regular Air Small Business CN Regular Product Container

Regular Air Home Office LA Regular Product Name

Regular Air Home Office CN Regular Product Sub-Category

Regular Air Corporate LA Regular Profit

Regular Air Corporate LA Regular Quantity ordered new

Table: Machine Sales Test (9,426 rows)

Power Query – Transform Data

1. Go to Home → Transform Data to open the Power Query Editor.

File Home Help Table tools

Paste Cut Get data from workbook Catalog OneLake SQL Enter data Dataverse Recent sources Transform data Refresh data Manage relationships New measure New measure column New table New table Manage roles as Security

Clipboard Data

Row ID Order Priority Discount Unit Price Shipping Cost Customer ID Customer Name Ship Mode Customer Segment Prod

151 Low 0.06 122.99 19.99 2382 Sneha Kulkarni Regular Air Small Business CN

441 Critical 0.01 205.99 19.99 68 Varun Bansal Regular Air Corporate LA

442 Critical 0.09 162.93 19.99 68 Meera Srinivasan Regular Air Corporate CN

444 Medium 0.01 162.93 19.99 640 Anita Nair Regular Air Consumer CN

567 Not Specified 0.02 1270.99 19.99 1733 Sanjay Patil Regular Air Small Business CN

799 Not Specified 0.01 99.99 19.99 1413 Suresh Kumar Regular Air Corporate LA

998 High 0.03 896.99 19.99 2867 Manoj Joshi Regular Air Corporate CN

1042 Critical 0.06 49.99 19.99 3011 Ramesh Choudhary Regular Air Corporate LA

1225 Low 0.1 40.48 19.99 698 Rajesh Pillai Regular Air Corporate LA

1523 Not Specified 0.05 122.99 19.99 3106 Sneha Kulkarni Regular Air Home Office CN

1552 Low 0.09 49.99 19.99 1193 Karthik Subramanian Regular Air Small Business LA

1846 High 0.05 420.98 19.99 2403 Sanjay Patil Regular Air Consumer CN

2136 Medium 0.07 1270.99 19.99 349 Pooja Desai Regular Air Home Office CN

2336 High 0 65.99 19.99 3342 Neha Gupta Regular Air Home Office LA

3013 High 0 78.69 19.99 1745 Vikram Rao Regular Air Home Office HY

3212 Medium 0.04 419.19 19.99 2491 Rahul Verma Regular Air Home Office CN

3521 Critical 0.04 420.98 19.99 2882 Deepa Reddy Regular Air Consumer CN

4258 Medium 0.06 193.17 19.99 607 Deepa Reddy Regular Air Corporate CN

4413 Critical 0.03 95.43 19.99 2498 Manoj Joshi Regular Air Small Business CN

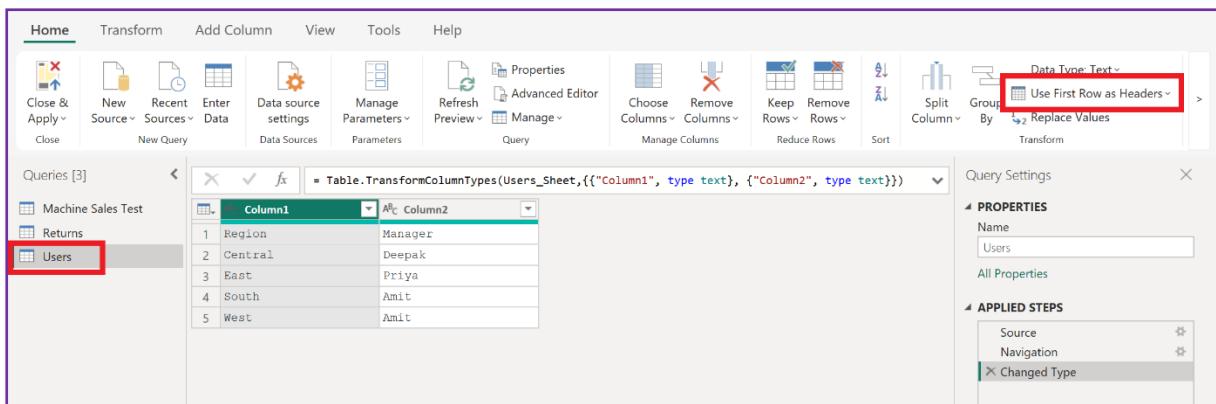
4821 Critical 0.03 99.99 19.99 3196 Deepa Reddy Regular Air Home Office LA

4898 Critical 0.07 419.19 19.99 2107 Anita Nair Regular Air Home Office CN

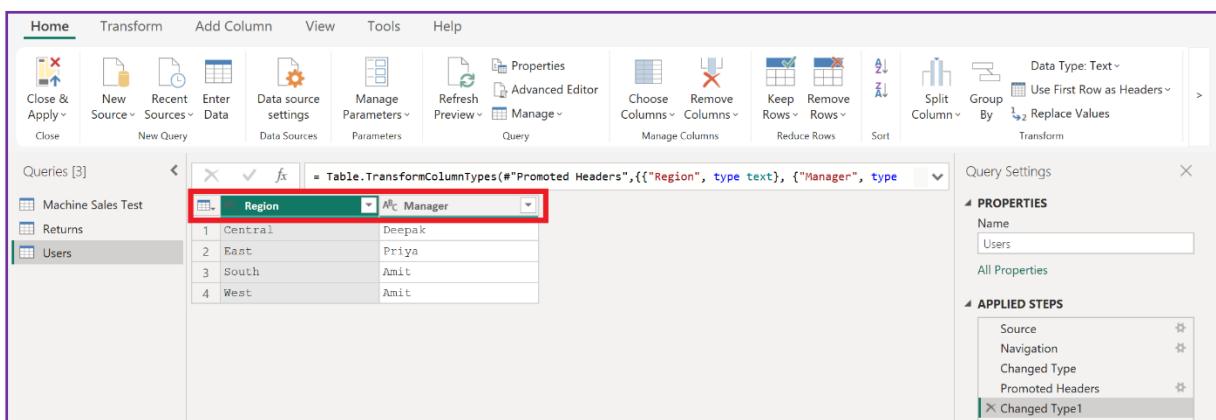
5234 Low 0.1 49.99 19.99 3075 Vikram Rao Regular Air Corporate LA

Table: Machine Sales Test (9,426 rows)

2. Choose Users data sheet and click on Use First Row as Headers to promote the first row as column headers.

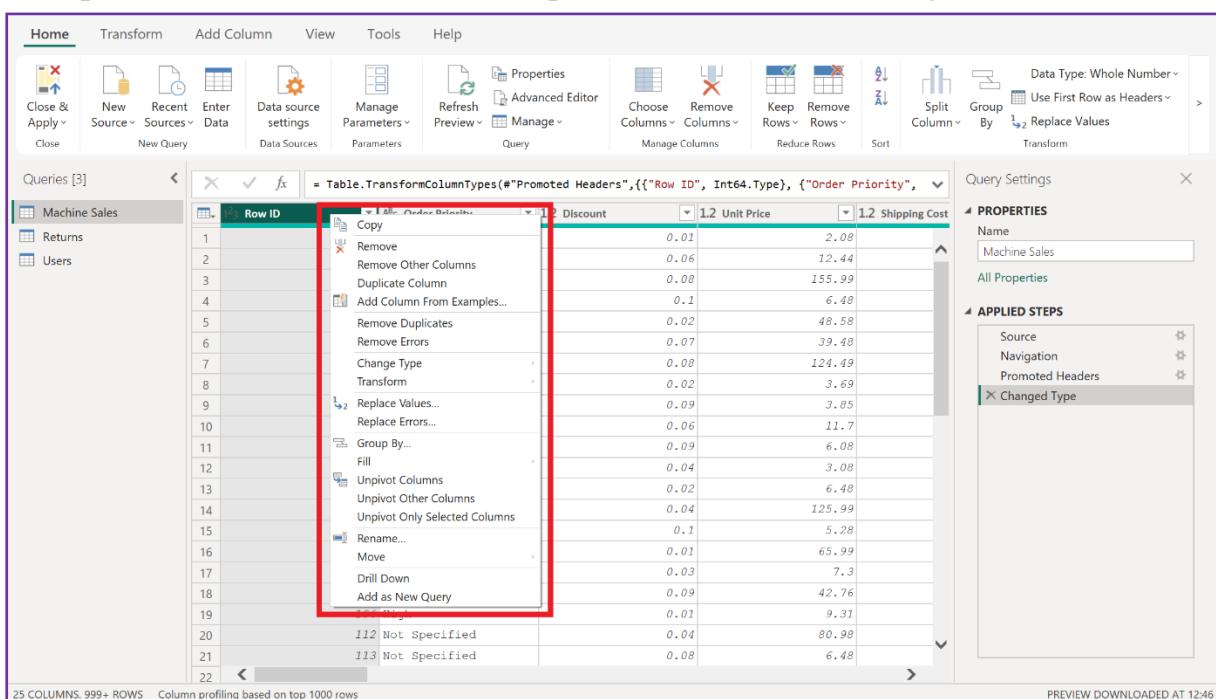


The screenshot shows the Power Query Editor interface. In the top ribbon, the 'Transform' tab is selected. Below the ribbon, the 'Queries [3]' pane shows three items: 'Machine Sales Test', 'Returns', and 'Users'. The 'Users' item is selected and highlighted with a red box. In the main workspace, a table is displayed with columns 'Column1' and 'Column2'. The data rows are: 1 Region Manager, 2 Central Deepak, 3 East Priya, 4 South Amit, 5 West Amit. On the right side, the 'Query Settings' pane is open, showing the 'Properties' and 'Applied Steps' sections. The 'Applied Steps' section lists 'Source', 'Navigation', 'Changed Type', and 'Use First Row as Headers'.



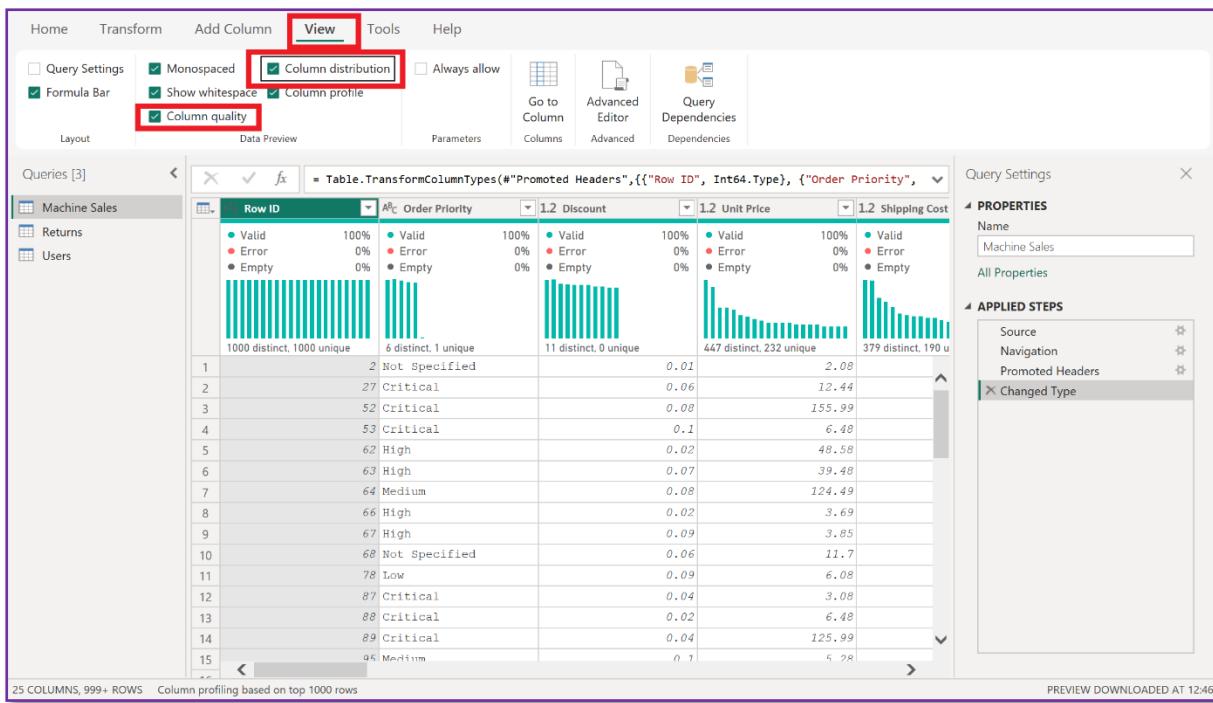
This screenshot is similar to the one above, showing the 'Users' query in the Power Query Editor. The 'Promoted Headers' step is highlighted with a red box in the 'Applied Steps' section of the 'Query Settings' pane. The table in the workspace shows the same data as before.

- Right-click on any column in the Power Query Editor to access various options. You can duplicate, add, remove, change the type, transform, replace values, unpivot, drill down, or remove duplicates and errors, among other actions.



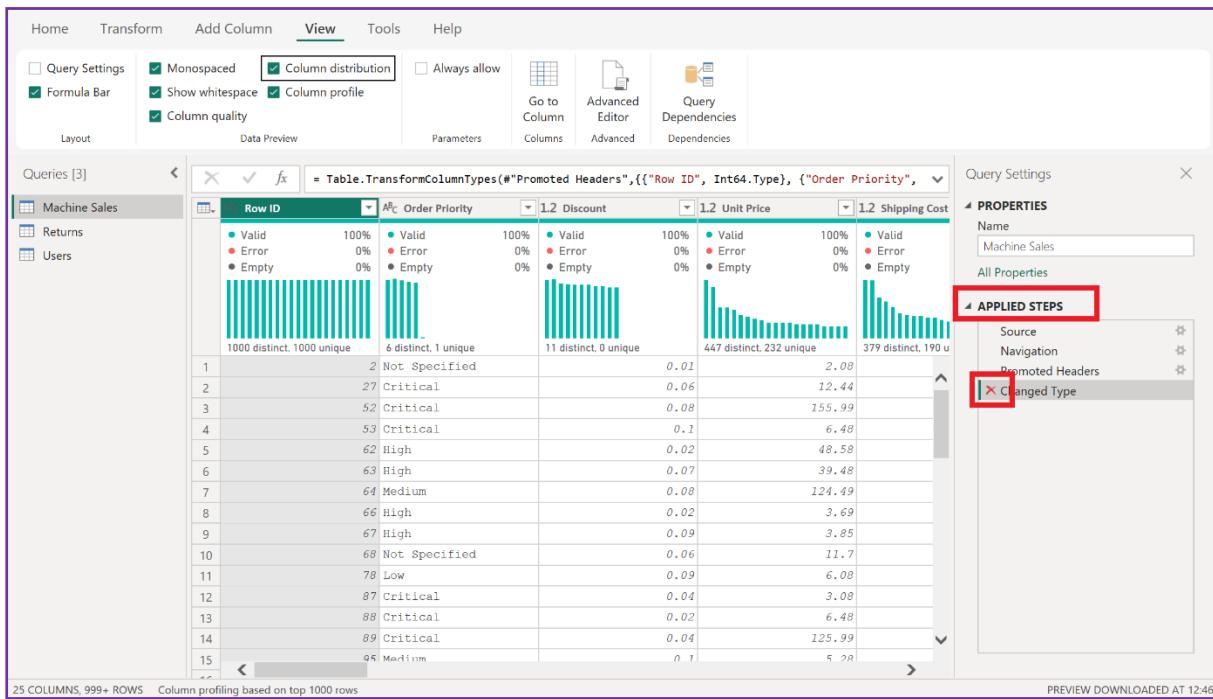
This screenshot shows the 'Machine Sales' query in the Power Query Editor. A red box highlights the context menu for the 'Row ID' column, which includes options like 'Copy', 'Remove', 'Duplicate Column', 'Add Column from Examples...', 'Remove Duplicates', 'Remove Errors', 'Change Type', 'Transform', 'Replace Values...', 'Replace Errors...', 'Group By...', 'Unpivot Columns', 'Unpivot Other Columns', 'Unpivot Only Selected Columns', 'Rename...', 'Move', 'Drill Down', and 'Add as New Query'. The main workspace displays a table with columns 'Row ID', 'Discount', 'Unit Price', and 'Shipping Cost'. The 'Query Settings' pane on the right shows the 'Properties' and 'Applied Steps' sections, with 'Changed Type' listed under 'Applied Steps'.

- Select any column and Go to View to check the column quality and distribution of data.



The screenshot shows the Power Query Editor interface. The **View** tab is selected. In the **Layout** section, three checkboxes are visible: **Monospaced**, **Column distribution** (which is checked and highlighted with a red box), and **Column quality** (which is also checked). The **Data Preview** pane displays a table with five columns: Row ID, Order Priority, 1.2 Discount, 1.2 Unit Price, and 1.2 Shipping Cost. The **Properties** pane on the right shows the **APPLIED STEPS** section, which includes the step **Changed Type**.

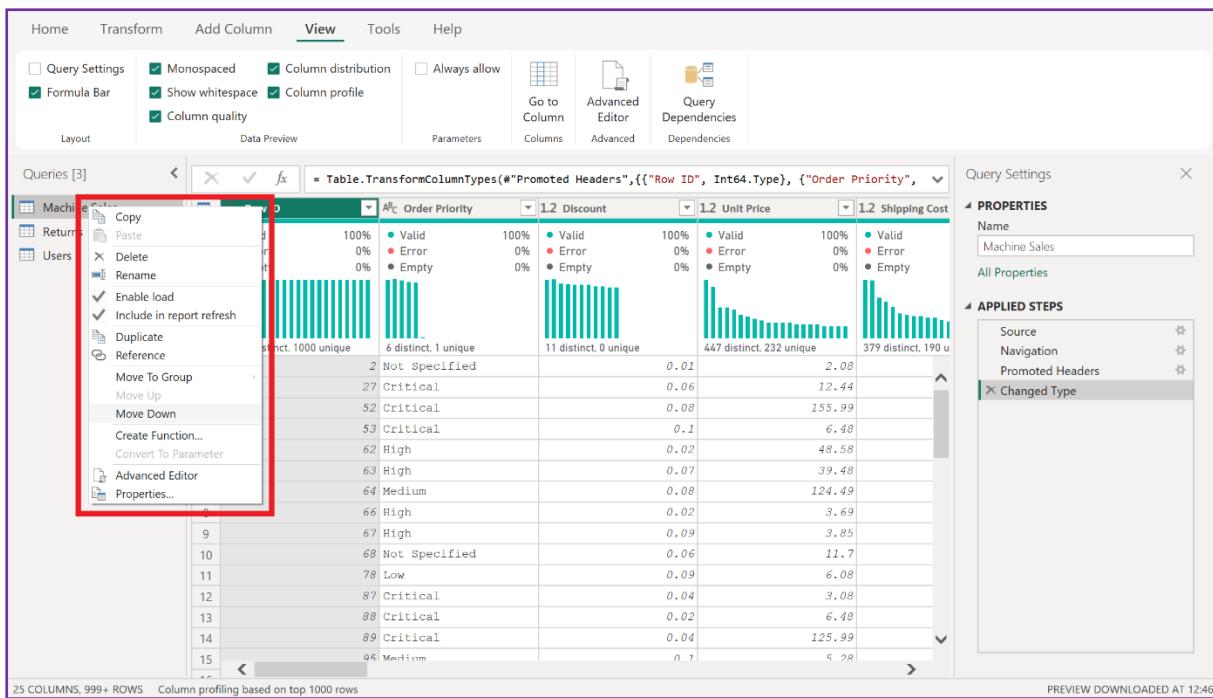
- To undo actions in the Power Query Editor, click on the delete (cross mark) icon in the **APPLIED STEPS** section on the right-hand side. This will remove the selected transformation step.



This screenshot is identical to the one above it, showing the Power Query Editor with the **View** tab selected. The **Layout** section shows the **Column distribution** and **Column quality** checkboxes checked. The **Data Preview** pane shows the same table. The **Properties** pane on the right shows the **APPLIED STEPS** section, where the **Changed Type** step has a red box drawn around its delete icon.

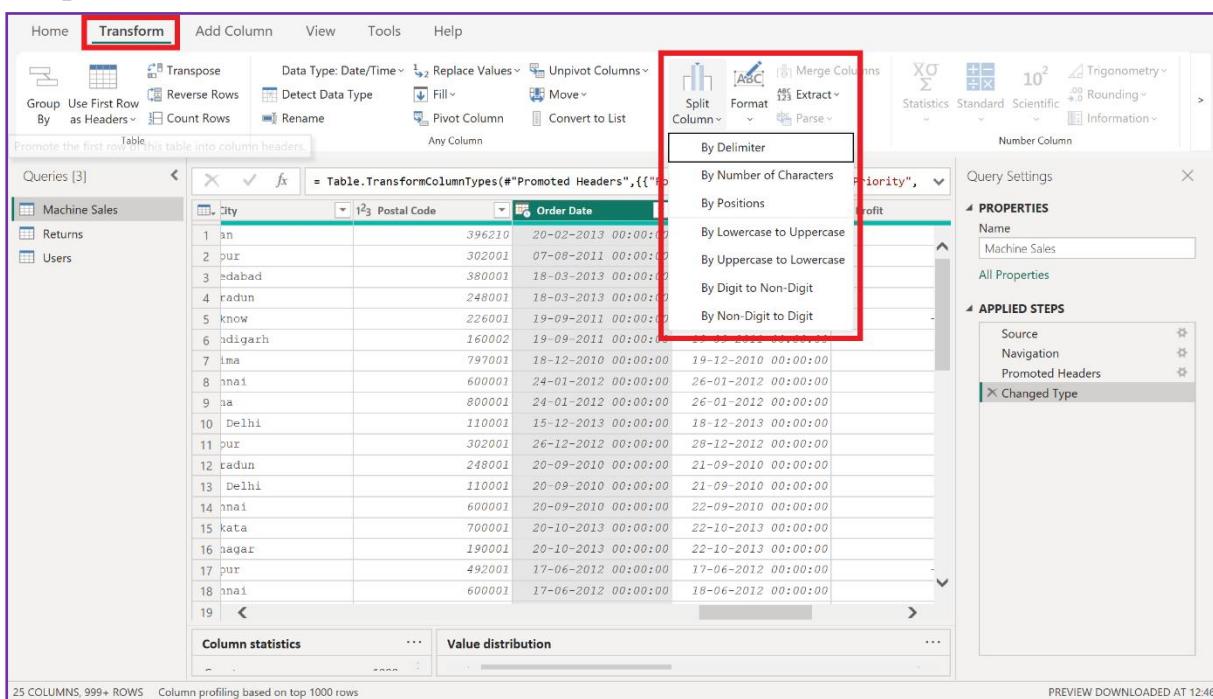
- Right-click on the data sheets to access additional features such as **Copy**, **Duplicate**, and other options for managing your data.

Screenshot of Power BI desktop showing the 'View' tab selected. A context menu is open over a column in the data grid, with the 'Advanced Editor' option highlighted. The 'APPLIED STEPS' pane shows a step named 'Changed Type'.

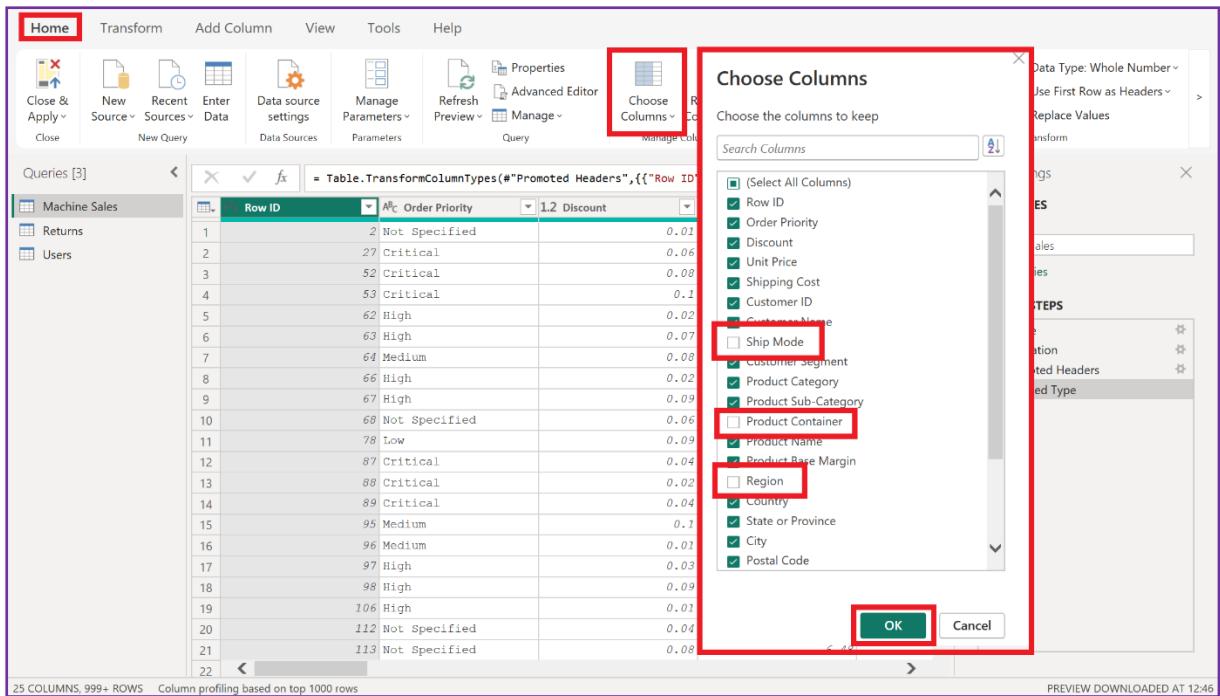


- Click on any column and navigate to **Transform → Split Column** to split the column data based on a **Delimiter**, **Number of Characters**, or other available options.

Screenshot of Power BI desktop showing the 'Transform' tab selected. A context menu is open over a column in the data grid, with the 'By Delimiter' option highlighted. The 'APPLIED STEPS' pane shows a step named 'Changed Type'.

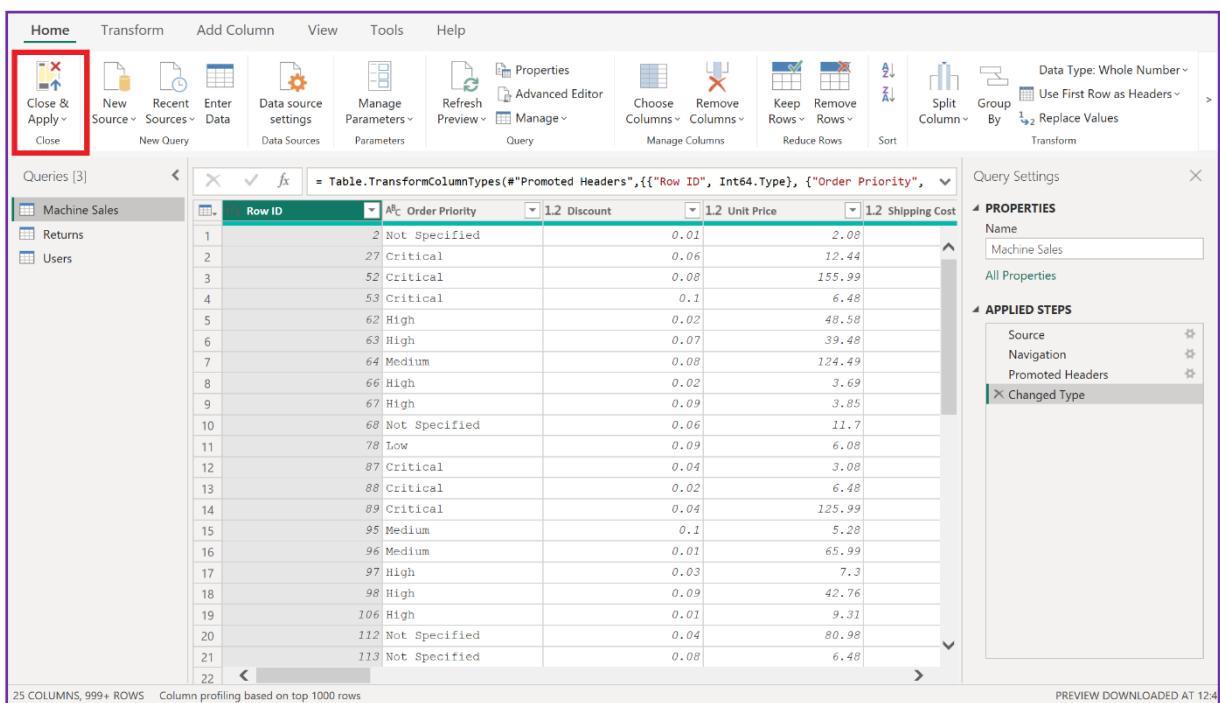


- Go to **Home → Choose Columns** to select which columns to show or hide in your data view.



The screenshot shows the Power Query Editor interface. A 'Choose Columns' dialog box is open, listing various columns from the query. Several columns are selected with checkboxes. The 'OK' button at the bottom right of the dialog is highlighted with a red box.

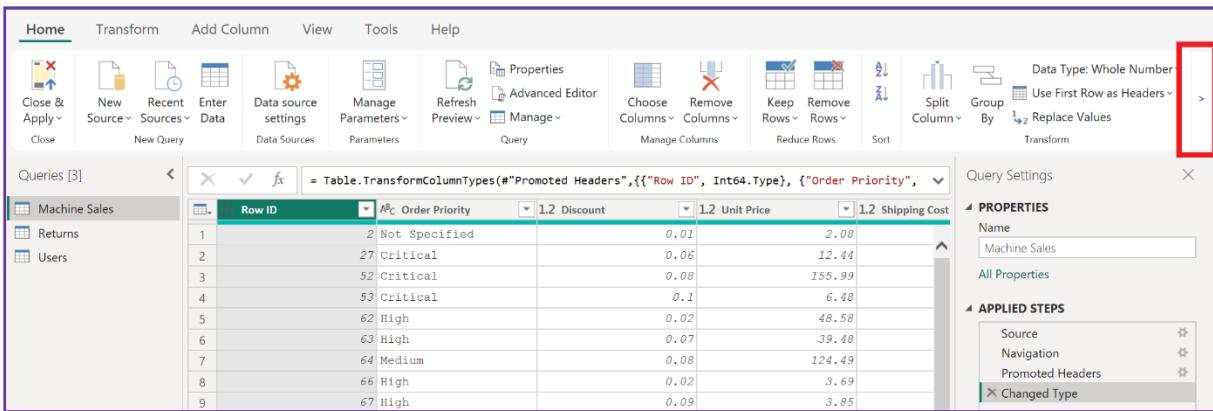
9. Click on **Close & Apply** in the Power Query Editor to save the changes and apply them to your Power BI report.



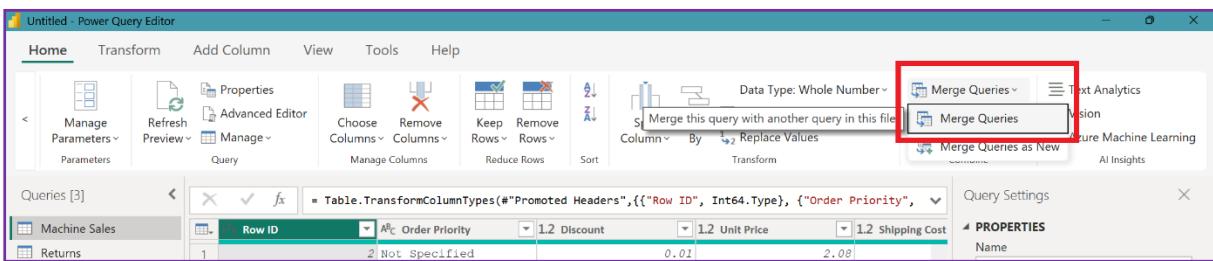
The screenshot shows the Power Query Editor interface after applying the column selection. The 'Close & Apply' button in the top-left corner is highlighted with a red box. The 'OK' button in the 'Choose Columns' dialog box is also highlighted with a red box.

Merge Queries

1. Select the data sheet (e.g., **Machine Sales**) and go to **Home** → **Transform data** to open the Power Query Editor again.
2. Click on the right expand button in Power Query Editor to access additional options. Locate and select the **Merge Queries** option to combine data from multiple tables based on a common column.

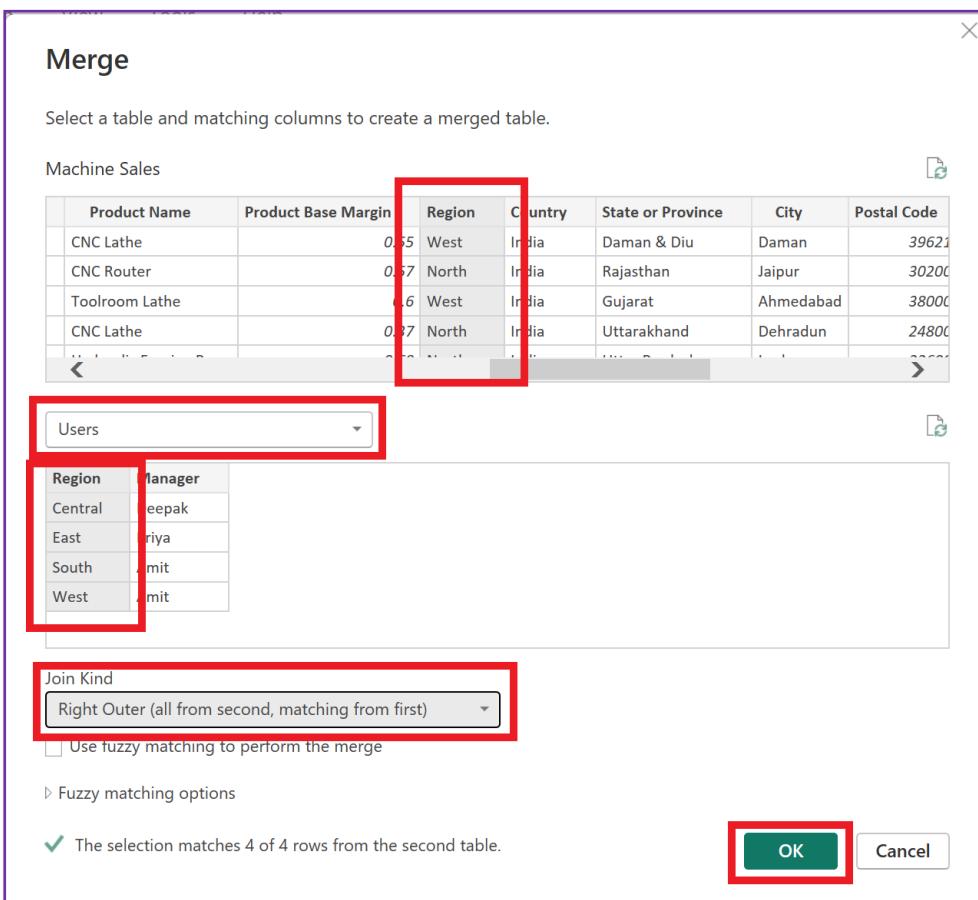


The screenshot shows the Power Query Editor interface with the 'Transform' tab selected in the ribbon. The main area displays a table with columns: Row ID, Order Priority, Discount, Unit Price, and Shipping Cost. The 'Properties' pane on the right shows the query name 'Machine Sales' and applied steps like 'Promoted Headers' and 'Changed Type'. The 'Applied Steps' section lists 'Source', 'Navigation', 'Promoted Headers', and 'Changed Type'.



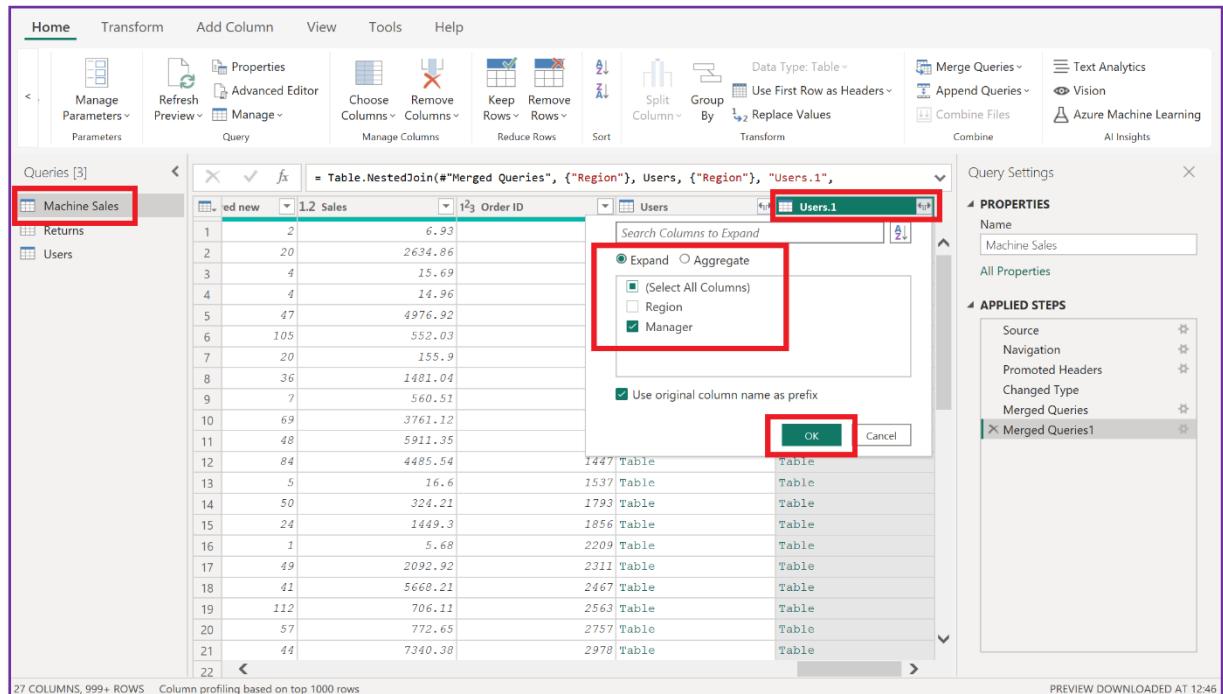
This screenshot is similar to the one above, but the 'Merge Queries' button in the ribbon is highlighted with a red box. The table and properties pane are identical.

3. In the **Merge** window, select the data sheet you want to merge with (e.g., **Users**). Identify the common column between the two sheets (e.g., **Region**) and select **Right Outer** as the **Join Kind**. Click **OK** to merge the data from the second sheet into the first sheet.

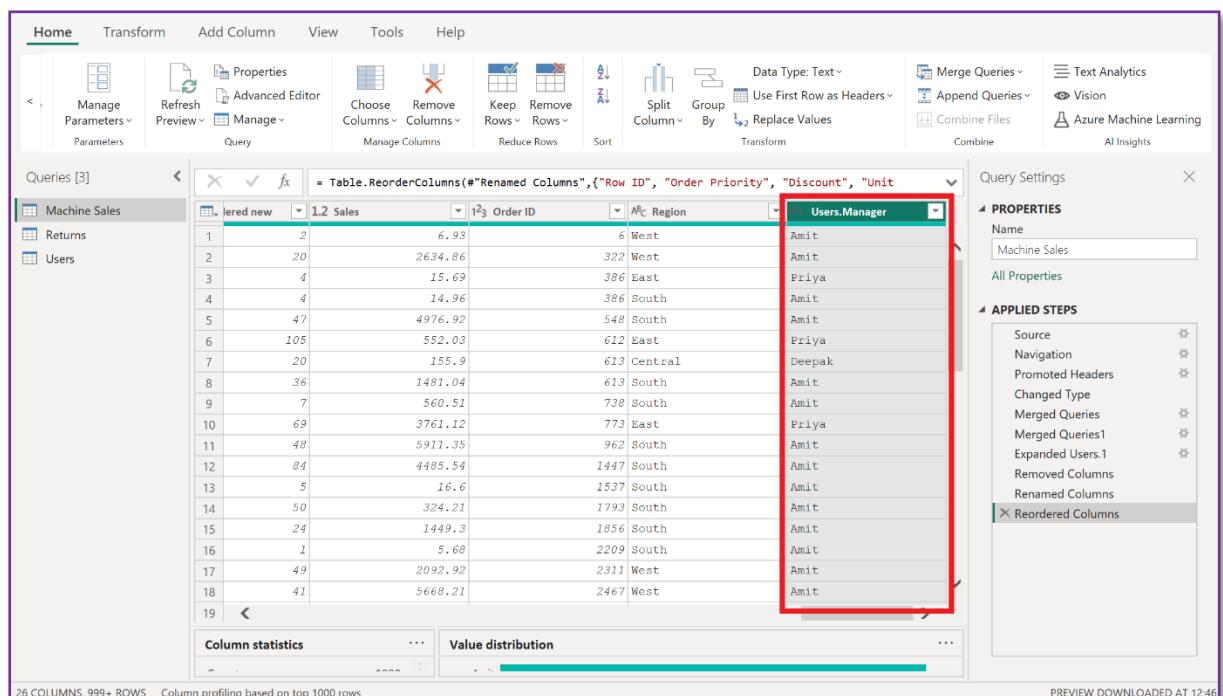


The screenshot shows the 'Merge' dialog box. At the top, it says 'Select a table and matching columns to create a merged table.' Below this, the 'Machine Sales' table is shown with its columns: Product Name, Product Base Margin, Region, Country, State or Province, City, and Postal Code. A red box highlights the 'Region' column. Below it, the 'Users' table is shown with its columns: Region and Manager. Another red box highlights the 'Region' column. At the bottom of the dialog, the 'Join Kind' dropdown is set to 'Right Outer (all from second, matching from first)', which is also highlighted with a red box. There is a checkbox for 'Use fuzzy matching to perform the merge' and a note that 'The selection matches 4 of 4 rows from the second table.' The 'OK' button is highlighted with a red box at the bottom right.

4. Go to the **Machine Sales** sheet and navigate to the last column. A new hierarchy will be created. Click on it and choose **Manager**. Region-wise manager data will be populated into the **Machine Sales** sheet based on **Users** sheet data.



The screenshot shows the Power BI Editor interface. In the top ribbon, the 'Home' tab is selected. The 'Queries [3]' pane on the left lists 'Machine Sales', 'Returns', and 'Users'. The 'Machine Sales' query is currently selected. In the main area, a table preview shows columns: Order ID, Sales, and Region. A context menu is open over the 'Manager' column, with the 'Expand' option selected. The 'OK' button is highlighted with a red box. The 'APPLIED STEPS' pane on the right shows the step 'Merged Queries1'.



The screenshot shows the Power BI Editor interface. The 'Machine Sales' query is selected in the 'Queries [3]' pane. The main area displays the same table preview as before, but the 'Manager' column now shows a list of managers for each region. The 'APPLIED STEPS' pane on the right highlights the 'Reordered Columns' step.

5. Click on **Close & Apply** to update the changes into Power BI.

Power BI Desktop

The screenshot shows the Power BI Desktop interface with the following details:

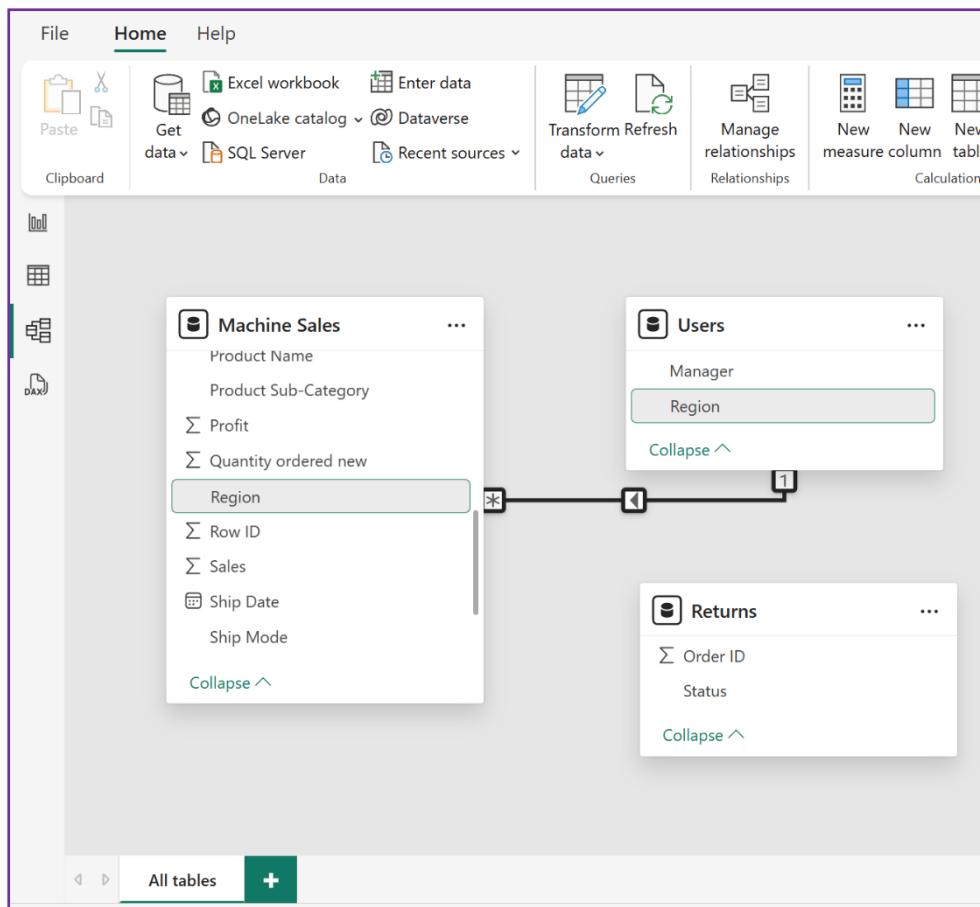
- Home ribbon:** Home, Transform, Add Column, View, Tools, Help.
- Queries [3]:** Machine Sales, Returns, Users.
- Table view:** A table titled "Machine Sales" with columns: Row ID, Order Priority, Discount, Unit Price, and Shipping Cost. The "Order Priority" column has been transformed from a string type to an integer type ("Int64.Type").
- Properties pane:** Properties for "Machine Sales" query, showing the name and applied steps (Promoted Headers, Changed Type).
- Applied Steps pane:** Shows the transformation step: "Changed Type".
- Bottom status bar:** 25 COLUMNS, 999+ ROWS, PREVIEW DOWNLOADED AT 12:4.

Power BI Desktop

The screenshot shows the Power BI Desktop interface with the following details:

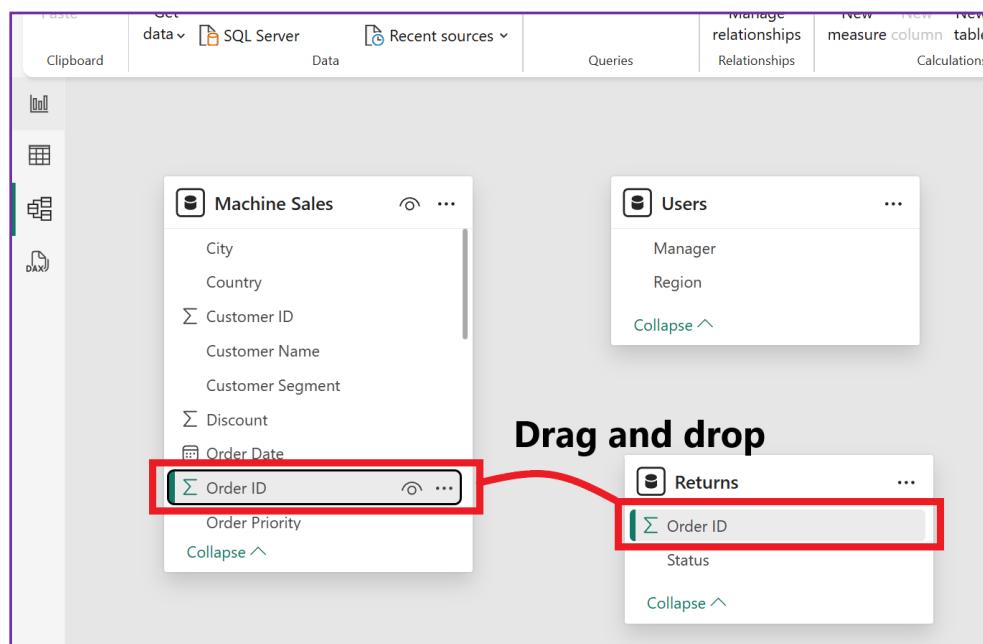
- Home ribbon:** File, Home, Help, Table tools, Column tools.
- Data ribbon:** Clipboard, Data, Queries, Relationships, Calculations, Security.
- Table view:** A table with columns: City, Postal Code, Order Date, Ship Date, Profit, Quantity ordered new, Sales, Order ID, and Manager. The "Manager" column is highlighted with a red border.
- Power BI Data Model pane:** Shows the relationships between various dimensions and fact tables, including "Users.Manager" which is highlighted.
- Bottom status bar:** Table: Machine Sales (4,903 rows) Column: Users.Manager (3 distinct values)

6. A new relationship will be created, which can be viewed in the **Model view**.



Relationships

Relationships can be created instantly in **Model view**. Select a common column between the two sheets, then drag and drop the column from the first sheet onto the second sheet. Click **Save** to establish the relationship.



New relationship

Select tables and columns that are related.

From table

Machine Sales

Order ID	Order Priority	Postal Code	Product Base ...	Product Cate...	Product Cont...	Product N
962	Low	695001	0.37	CNC Machines	Small Box	CNC Lat
3008	Medium	403001	0.39	CNC Machines	Small Box	CNC Lat
3841	Not Specified	834001	0.35	CNC Machines	Small Box	CNC Lat

To table

Returns

Order ID	Status
612	Returned
4610	Returned
7079	Returned

Cardinality

Many to one (*:1)

Cross-filter direction

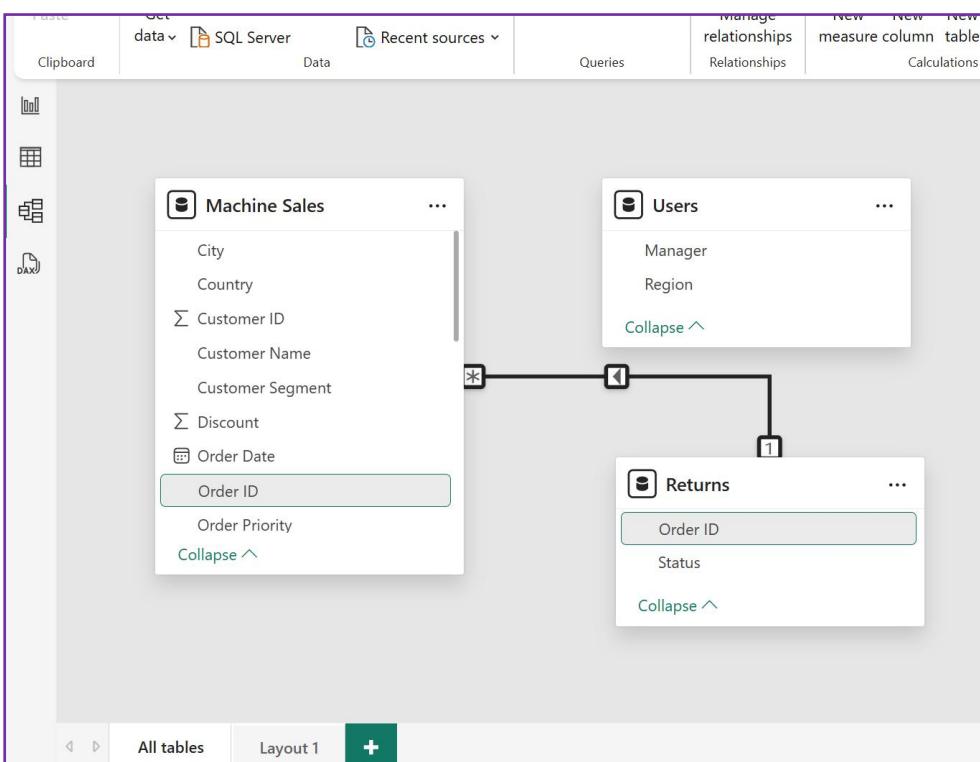
Single

Make this relationship active

Apply security filter in both directions

Assume referential integrity

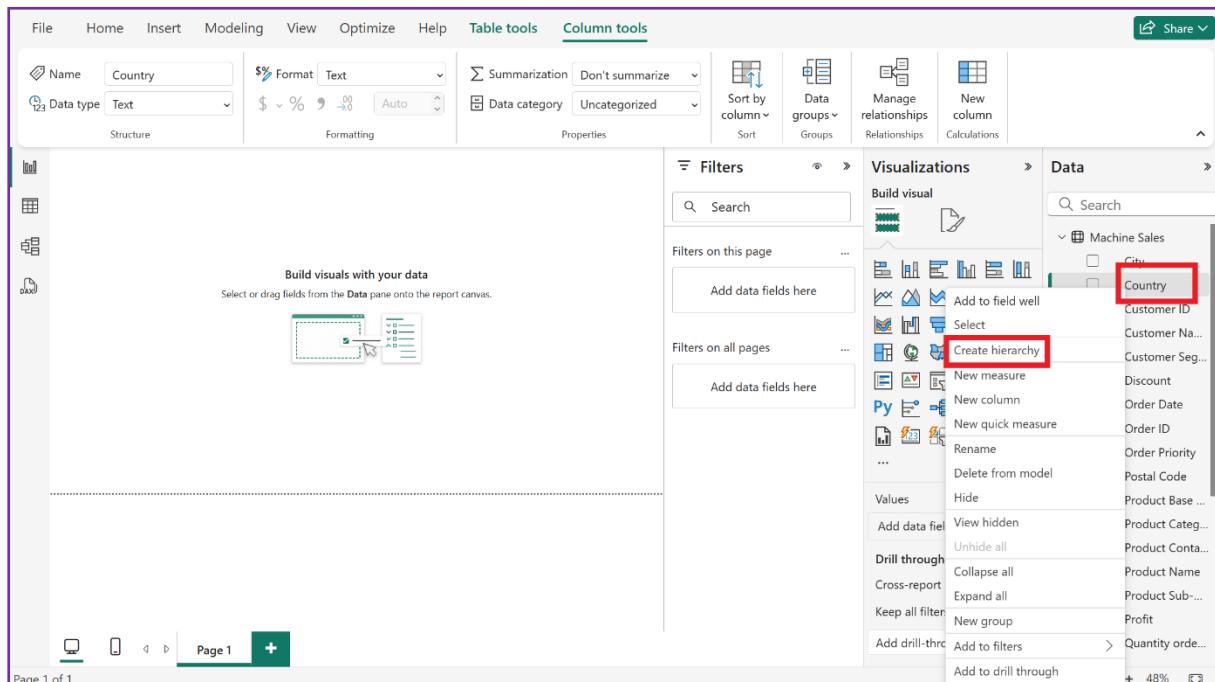
Save **Cancel**



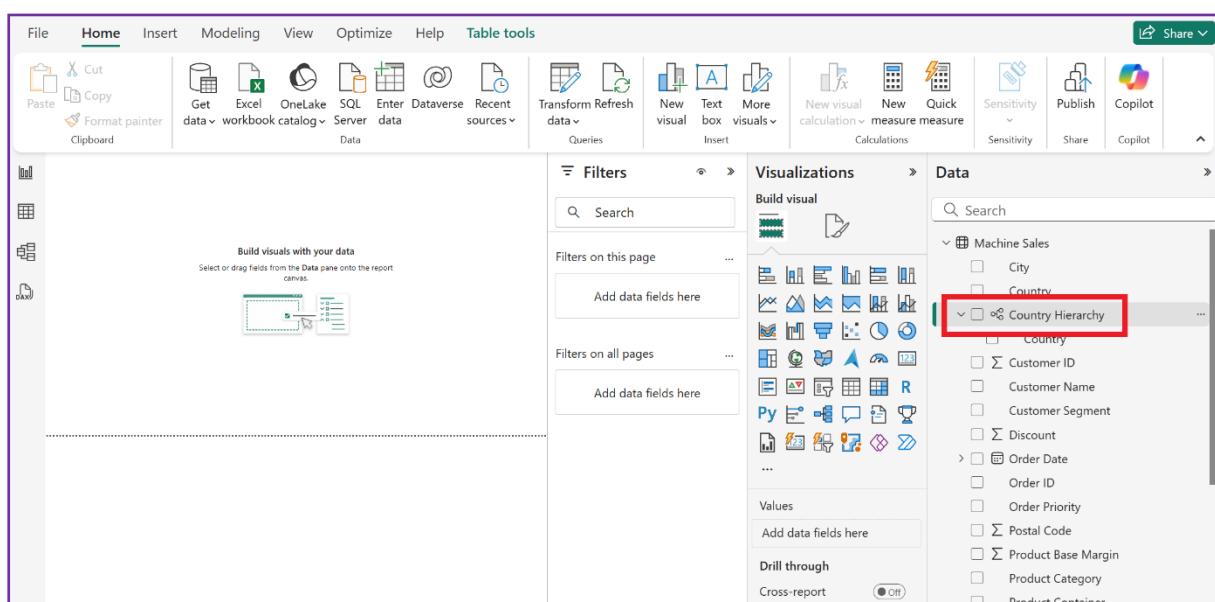
Note: Relationships establish quick connections between tables, enabling efficient data linking, whereas **Merge Queries** combine data from one sheet into another by creating relationships and integrating values directly.

Hierarchy

1. In Power BI, you can manually create hierarchies for custom data visualizations. This allows you to organize data into meaningful levels, making it easier to drill down and analyze trends effectively.
2. Right-click on any column data (e.g., Country) and choose "Create hierarchy." This will create a new hierarchy, and you can add more fields to it for better data organization and drill-down analysis.

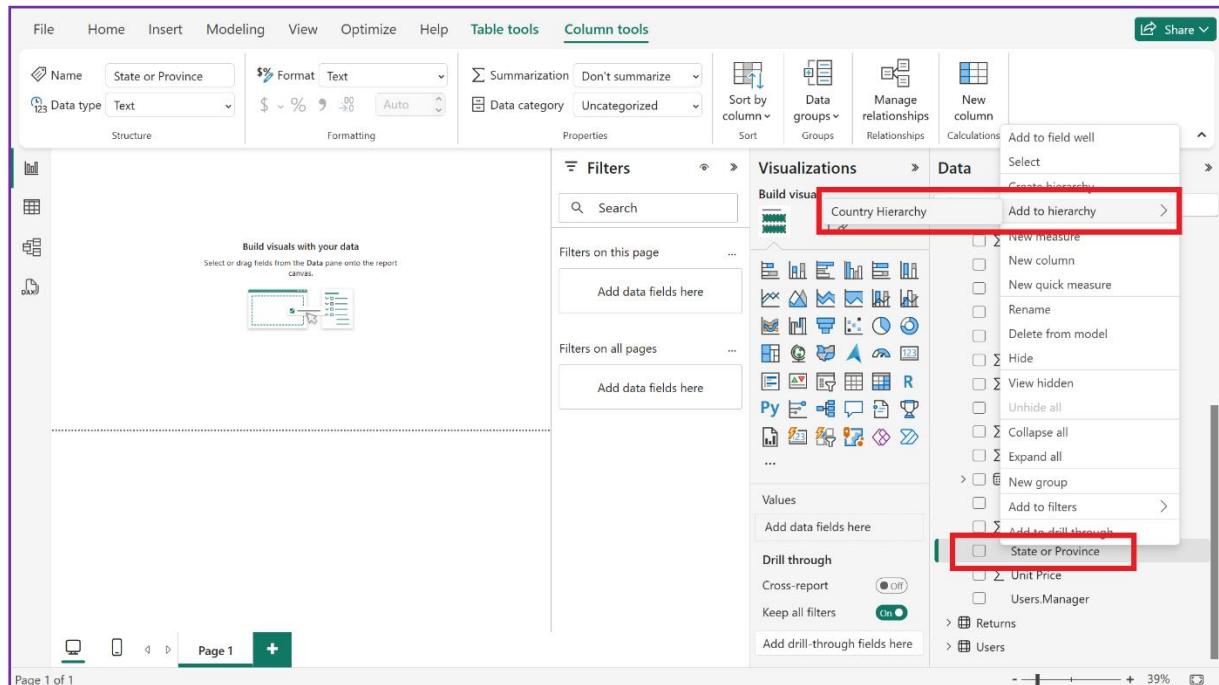


The screenshot shows the Power BI desktop application. The ribbon at the top has 'Table tools' selected. In the Data pane on the left, there's a table with a single column named 'Country'. A context menu is open over this column, and the 'Create hierarchy' option is highlighted with a red box. The Data pane on the right shows various data fields like 'Customer ID', 'Customer Name', etc., with 'Country' being the current item.

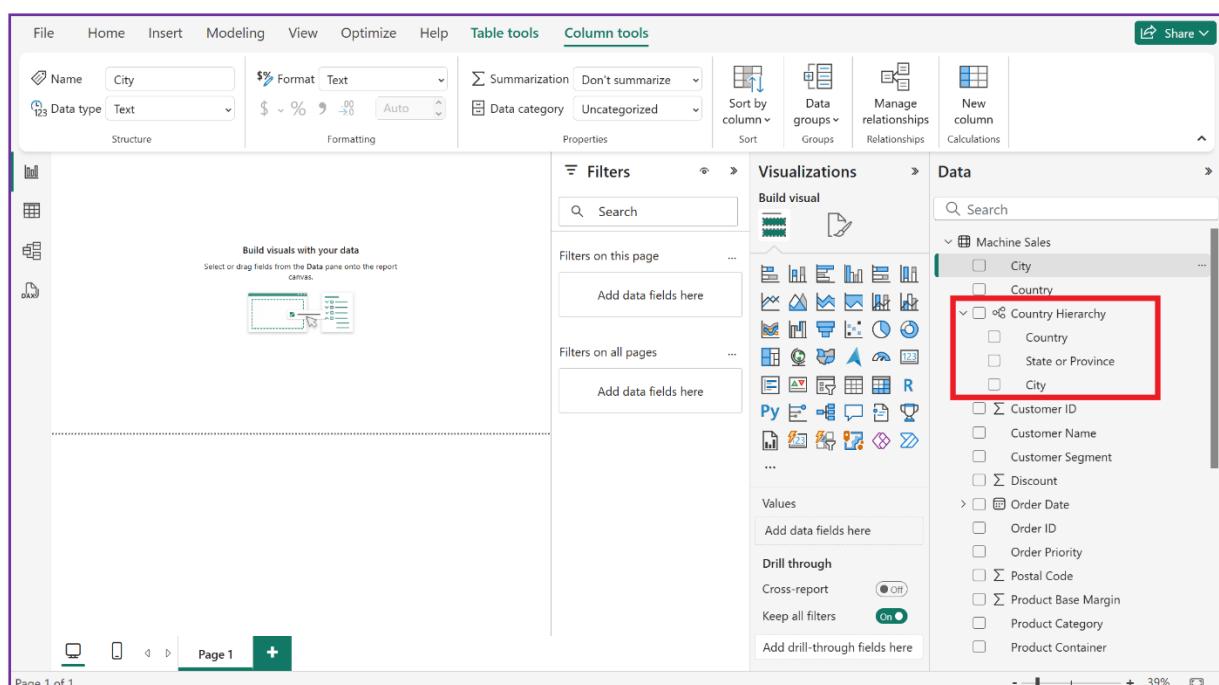


This screenshot shows the same Power BI desktop setup as the previous one, but with the 'Home' ribbon selected. The context menu over the 'Country' column still has 'Create hierarchy' highlighted. After creating the hierarchy, the Data pane now shows a new entry under 'Machine Sales' called 'Country Hierarchy', which contains the original 'Country' field and other related fields like 'Customer ID' and 'Customer Name'.

3. For the next level in the hierarchy, choose **State or Province** and **City**. Right-click on these columns and select **Add to hierarchy** → **Country Hierarchy** to include them in the existing hierarchy.



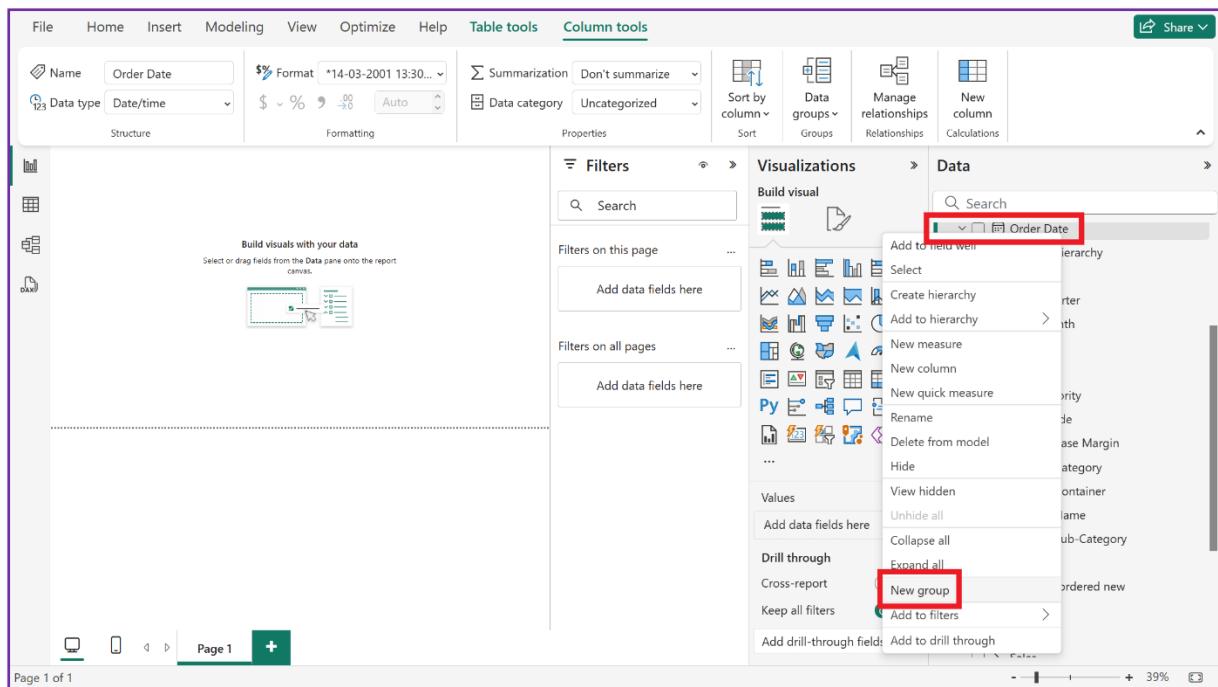
The screenshot shows the Microsoft Power BI interface with the 'Column tools' ribbon selected. In the 'Data' section of the ribbon, a context menu is open over the 'State or Province' column. The menu path 'Add to hierarchy > Country Hierarchy' is highlighted with a red box. The final item in the submenu, 'State or Province', is also highlighted with a red box.



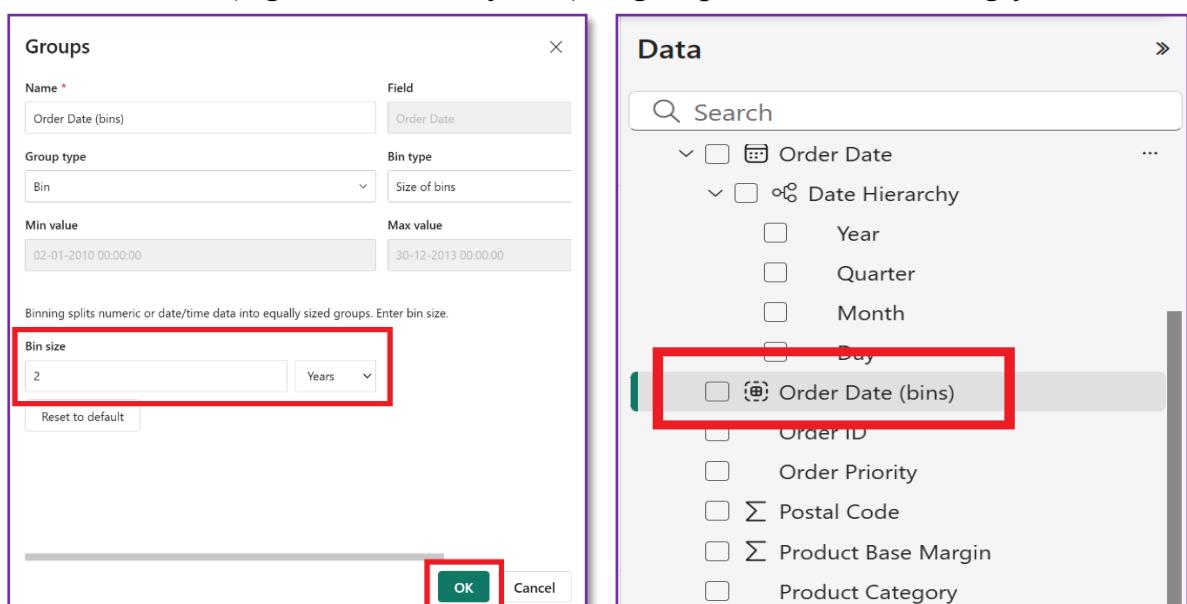
The screenshot shows the Microsoft Power BI interface with the 'Column tools' ribbon selected. In the 'Data' section of the ribbon, the 'Country Hierarchy' node under 'Machine Sales' is expanded, showing its three levels: Country, State or Province, and City. This expanded node is highlighted with a red box.

Group

1. Grouping allows us to create customized timelines or categorize data based on specific requirements.
2. To create a new group, right-click on any column and select **New group**.



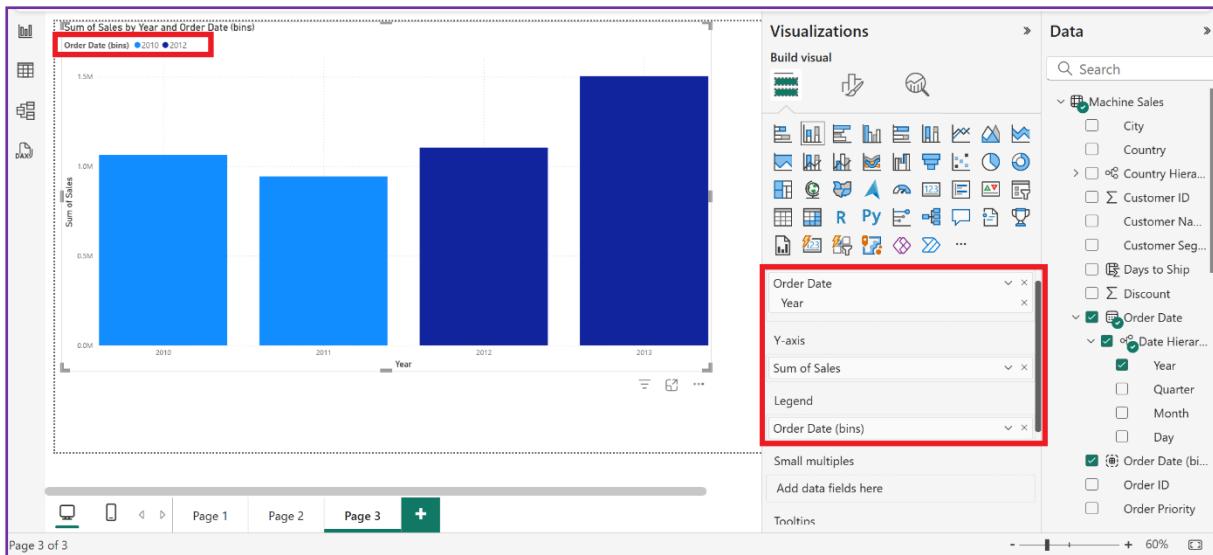
3. In the **Groups** window, select the desired parameter (e.g., **Years**) and specify the bin size (e.g., **number of years**) to group the data accordingly.



Groups Window: Shows the 'Groups' dialog box with 'Name' set to 'Order Date (bins)', 'Field' set to 'Order Date', 'Group type' set to 'Bin', and 'Bin size' set to '2'. The 'OK' button is highlighted with a red box.

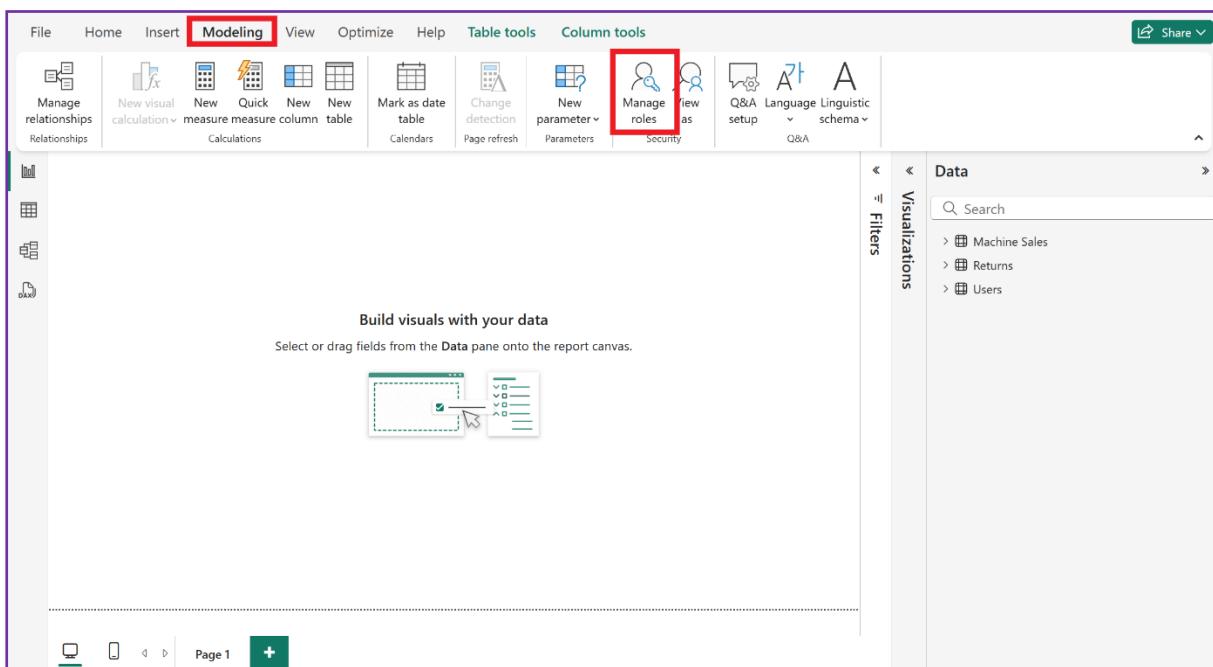
Data Window: Shows the 'Data' pane with the 'Order Date' field selected. A red box highlights the 'Order Date (bins)' entry under the 'Order Date' hierarchy.

4. Create a **Stacked column chart** with **Sales** vs **Order Date** and use **Order Date (bins)** as the **Legend** to visualize the results.



Manage roles

1. Go to the **Modeling** tab and click on **Manage roles** to define user roles and data access permissions.



2. Create a new role named **East Manager** and apply a filter to the **Region** column in the **Machine Sales** sheet, selecting only **East**. Click **Save** once done.

Manage security roles

Create new security roles and use filters to define row-level data restrictions.

Roles

- + New
- East Manager

Select tables

- Machine Sales
- Returns
- Users

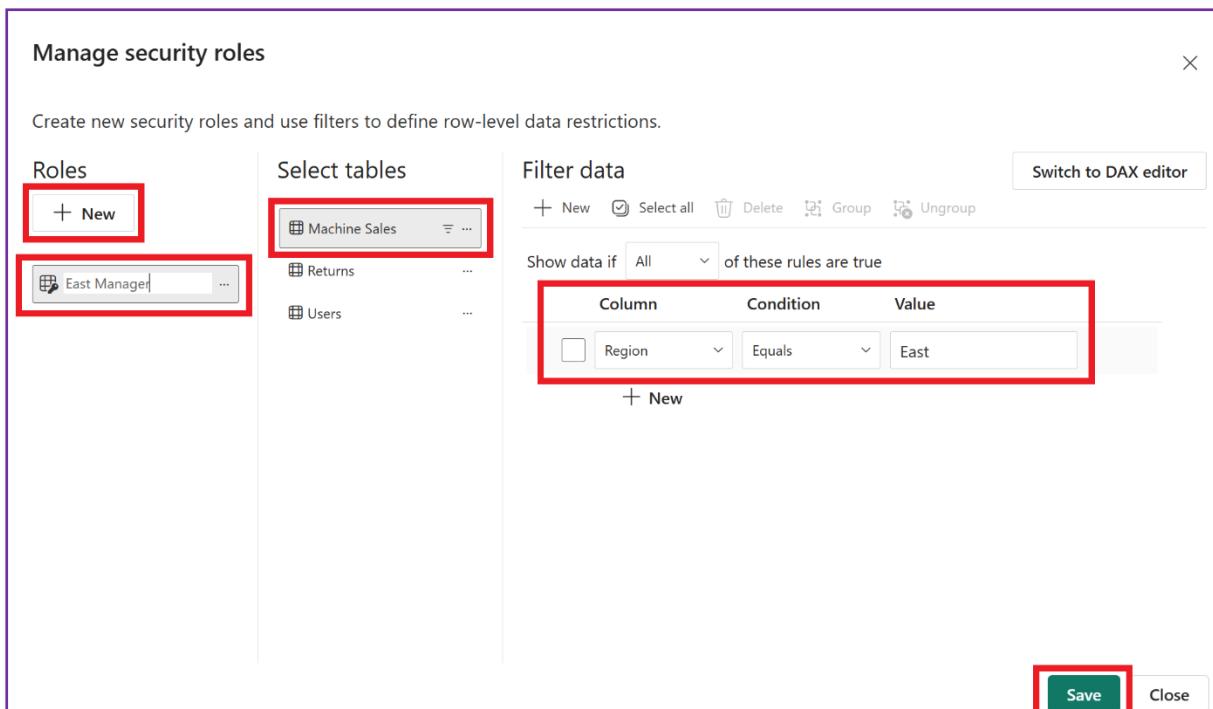
Filter data

Show data if All of these rules are true

Column	Condition	Value
Region	Equals	East

+ New

Save **Close**



3. In the **Modeling** tab, click on **View as**, select **East Manager**, and click **OK** to filter all visualizations and data by the East region.

File Home Insert **Modeling View Optimize Help**

Relationships **New visual calculation** **New measure** **Quick measure** **New column** **New table** **Mark as date table** **Change detection** **New parameter** **Manage roles** **View as** **Q&A** **Language setup** **A** **Visualizations** **Filters** **Data**

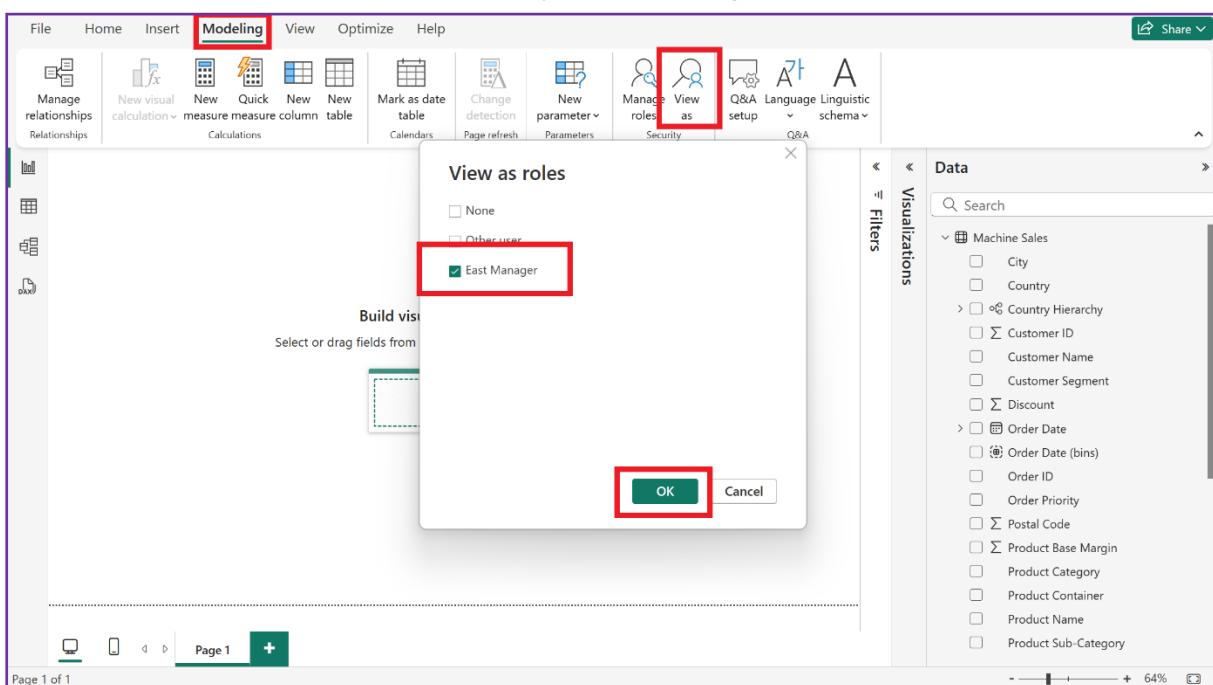
View as roles

- None
- Other user
- East Manager

Build view
Select or drag fields from

OK **Cancel**

Page 1 **+**



4. Go to **Table view** and navigate to the **Region** column, which will be filtered to show only the **East** data. Click on **Stop viewing** to clear the filter.

File Home Help Table tools Column tools

Name: Region **Data type:** Text **Format:** Text **Summarization:** Don't summarize **Data category:** Uncategorized **Sort by column:** Sort **Data groups:** Groups **Manage relationships:** Relationships **New column:** Calculations

Stop viewing **Data**

Now viewing as: East Manager

Margin	Region	Country	State or Province	City	Postal Code	Order Date	Ship Date	Profit	Quantity ord
0.5	East	India	Bihar	Patna	800001	17-06-2011 00:00:00	18-06-2011 00:00:00	134.832	
0.5	East	India	Odisha	Bhubaneswar	751001	02-04-2010 00:00:00	04-04-2010 00:00:00	246.2748	
0.5	East	India	Odisha	Bhubaneswar	751001	27-10-2011 00:00:00	29-10-2011 00:00:00	-24.354	
0.	East	Jharkhand	Ranchi		834001	19-12-2010 00:00:00	21-12-2010 00:00:00	-122.835	
0.5	East	India	Bihar	Patna	800001	10-09-2011 00:00:00	11-09-2011 00:00:00	-7.04	
0.5	East	India	West Bengal	Kolkata	700001	20-09-2011 00:00:00	21-09-2011 00:00:00	-11.88	
0.5	East	India	West Bengal	Kolkata	700001	01-08-2013 00:00:00	02-08-2013 00:00:00	49.122	
0.5	East	India	Odisha	Bhubaneswar	751001	22-01-2012 00:00:00	24-01-2012 00:00:00	377.4852	
0.5	East	Jharkhand	Ranchi		834001	27-12-2010 00:00:00	28-12-2010 00:00:00	-286.245	
0.5	East	India	West Bengal	Kolkata	700001	09-03-2013 00:00:00	11-03-2013 00:00:00	-948.71	
0.5	East	Jharkhand	Ranchi		834001	07-12-2012 00:00:00	10-12-2012 00:00:00	17.085	
0.5	East	India	West Bengal	Kolkata	700001	18-03-2010 00:00:00	19-03-2010 00:00:00	442.3659	
0.5	East	India	West Bengal	Kolkata	700001	09-03-2011 00:00:00	18-03-2011 00:00:00	455.42	
0.5	East	Jharkhand	Ranchi		834001	15-02-2012 00:00:00	19-02-2012 00:00:00	1491.8745	
0.5	East	India	Odisha	Bhubaneswar	751001	13-06-2012 00:00:00	15-06-2012 00:00:00	520.356	
0.	East	India	West Bengal	Kolkata	700001	06-07-2010 00:00:00	08-07-2010 00:00:00	187.2	
0.	East	Jharkhand	Ranchi		834001	13-07-2010 00:00:00	17-07-2010 00:00:00	-566	
0.5	East	India	Jharkhand	Ranchi	834001	05-08-2013 00:00:00	06-08-2013 00:00:00	9.1796	
0.	East	India	West Bengal	Kolkata	700001	10-04-2010 00:00:00	13-04-2010 00:00:00	28.566	
0.5	East	India	Bihar	Patna	800001	04-05-2012 00:00:00	06-05-2012 00:00:00	146.67	

Table: Machine Sales (1,048 rows) Column: Region (1 distinct values)

Formulas

1. Go to the **Column tools** and click on **New column**.

File Home Help Table tools Column tools

Name: Order Date (bins) **Data type:** Date/time **Format:** 2001 (yyyy) **Summarization:** Don't summarize **Data category:** Uncategorized **Sort by column:** Sort **Data groups:** Groups **Manage relationships:** Relationships **New column:** Calculations

Write a DAX expression that creates a new column in the selected table and calculates values for each row.

Order Date	Ship Date	Profit	Quantity ordered new	Sales	Order ID	Users.Manager	Order Date (bins)
05-05-2010 00:00:00	07-05-2010 00:00:00	1408.1865	48	5911.35	962	Amit	2010
07-11-2012 00:00:00	08-11-2012 00:00:00	3081.02	139	23161.2	3008	Amit	2012
04-10-2010 00:00:00	06-10-2010 00:00:00	9228.2556	36	45737.33	3841	Priya	2010
28-10-2010 00:00:00	30-10-2010 00:00:00	17.2	67	3247.54	7623	Amit	2010
28-12-2010 00:00:00	30-12-2010 00:00:00	-17.03	48	2373.32	11206	Amit	2010
12-08-2013 00:00:00	13-08-2013 00:00:00	3858.2775	44	18124.88	13284	Amit	2012
17-11-2012 00:00:00	19-11-2012 00:00:00	-5429.26615	10	11938.4	15264	Amit	2012
26-04-2010 00:00:00	27-04-2010 00:00:00	1947.67	20	8048.45	23042	Amit	2010
30-10-2011 00:00:00	01-11-2011 00:00:00	8999.75155	16	6988.56	25062	Amit	2010
12-10-2011 00:00:00	13-10-2011 00:00:00	-521.772	5	1988.22	34849	Deepak	2010
15-04-2011 00:00:00	17-04-2011 00:00:00	-138.54	32	1031.23	37318	Amit	2010
29-11-2010 00:00:00	29-11-2010 00:00:00	2008.71	167	27587.55	37924	Amit	2010
21-02-2010 00:00:00	21-02-2010 00:00:00	-76.89	18	901.87	38087	Amit	2010
03-09-2011 00:00:00	04-09-2011 00:00:00	-270.48	13	1361.95	44005	Amit	2010
12-03-2013 00:00:00	14-03-2013 00:00:00	4592.737	34	11823.52	44099	Amit	2012
27-02-2013 00:00:00	01-03-2013 00:00:00	3793.703	33	9758.7	50721	Amit	2012
02-10-2010 00:00:00	04-10-2010 00:00:00	1014.92	77	12599.55	51072	Priya	2010
24-05-2013 00:00:00	26-05-2013 00:00:00	163.8035	8	1390.61	53285	Deepak	2012
19-09-2011 00:00:00	19-09-2011 00:00:00	1049.02	60	4850.76	53314	Priya	2010
19-01-2011 00:00:00	22-01-2011 00:00:00	-139.744	1	155.51	54497	Amit	2010
15-07-2011 00:00:00	16-07-2011 00:00:00	489.02	11	2003.66	86136	Amit	2010
05-02-2010 00:00:00	07-02-2010 00:00:00	-170.98	1	180.14	86227	Amit	2010

Table: Machine Sales (4,903 rows) Column: Order Date (bins) (2 distinct values)

2. A **New column** will be enabled with a **formula bar**. We will calculate the number of days to ship using the formula. Press **Enter** to compute the result.

Days to Ship = `DATEDIFF('Machine Sales'[Order Date].[Date], 'Machine Sales'[Ship Date].[Date], day)`

File Home Help Table tools Column tools

Name Days to Ship Format Whole number Summarization Sum Data category Uncategorized Sort by column Data groups Manage relationships New column Calculations

1 days to Ship = DATEDIFF('Machine Sales'[Order Date].[Date], 'Machine Sales'[Ship Date].[Date], day)

Item	Ship Date	Profit	Quantity ordered new	Sales	Order ID	Users.Manager	Order Date (bins)	Days to Ship
00:00:00	07-05-2010 00:00:00	1408.1865	48	5911.35	962	Amit	2010	2
	08-11-2012 00:00:00	3081.02	139	23161.2	3008	Amit	2012	1
	06-10-2010 00:00:00	9228.2256	36	45737.33	3841	Priya	2010	2
	30-10-2010 00:00:00	17.2	67	3247.54	7623	Amit	2010	2
	30-12-2010 00:00:00	-17.03	48	2373.32	11206	Amit	2010	2
	13-08-2013 00:00:00	3858.2775	44	18124.88	13284	Amit	2012	1
	19-11-2012 00:00:00	-542.926615	10	11938.4	15264	Amit	2012	2
	27-04-2010 00:00:00	1947.67	20	8048.45	23042	Amit	2010	1
	01-11-2011 00:00:00	899.975155	16	6983.56	25062	Amit	2010	2
	13-10-2011 00:00:00	-521.772	5	1988.22	34849	Deepak	2010	1
	17-04-2011 00:00:00	-138.54	32	1031.23	37318	Amit	2010	2
	29-11-2010 00:00:00	2008.71	167	27587.55	37924	Amit	2010	0
	21-02-2010 00:00:00	-76.89	18	901.81	38087	Amit	2010	0
	04-09-2011 00:00:00	270.48	13	1361.95	44005	Amit	2010	1
	14-03-2013 00:00:00	4592.737	34	11823.52	44099	Amit	2012	2
	01-03-2013 00:00:00	3793.703	33	9758.7	50721	Amit	2012	2
	04-10-2010 00:00:00	1014.92	77	12599.55	51072	Priya	2010	2
	26-05-2013 00:00:00	163.8035	8	1390.61	53285	Deepak	2012	2
	19-09-2011 00:00:00	1049.02	60	4850.76	53314	Priya	2010	0
	22-01-2011 00:00:00	-139.744	1	155.51	54497	Amit	2010	3
	16-07-2011 00:00:00	489.02	11	2003.66	86136	Amit	2010	1
	07-02-2010 00:00:00	-170.98	1	180.14	86227	Amit	2010	2

Table: Machine Sales (4,903 rows) Column: Days to Ship (17 distinct values)

Quick measure

- Choose **Quick measure** on the **Home** tab.

File Home Help Table tools

Paste Cut Copy Get Excel OneLake SQL Enter Data Refresh Manage relationships New measure New column New table Quick New as Sensitivity Publish Clipboard Data Sources Relationships Security Share

Clipboard Data

Item	Ship Date	Profit	Quantity ordered new	Sales	Order ID	Users.Manager	Order Date (bins)	Days to Ship
00:00:00	07-05-2010 00:00:00	1408.1865	48	5911.35	962	Amit	2010	2
	08-11-2012 00:00:00	3081.02	139	23161.2	3008	Amit	2012	1
	06-10-2010 00:00:00	9228.2256	36	45737.33	3841	Priya	2010	2
	30-10-2010 00:00:00	17.2	67	3247.54	7623	Amit	2010	2
	30-12-2010 00:00:00	-17.03	48	2373.32	11206	Amit	2010	2
	13-08-2013 00:00:00	3858.2775	44	18124.88	13284	Amit	2012	1
	19-11-2012 00:00:00	-542.926615	10	11938.4	15264	Amit	2012	2
	27-04-2010 00:00:00	1947.67	20	8048.45	23042	Amit	2010	1
	01-11-2011 00:00:00	899.975155	16	6983.56	25062	Amit	2010	2
	13-10-2011 00:00:00	-521.772	5	1988.22	34849	Deepak	2010	1
	17-04-2011 00:00:00	-138.54	32	1031.23	37318	Amit	2010	2
	29-11-2010 00:00:00	2008.71	167	27587.55	37924	Amit	2010	0
	21-02-2010 00:00:00	-76.89	18	901.81	38087	Amit	2010	0
	04-09-2011 00:00:00	270.48	13	1361.95	44005	Amit	2010	1
	14-03-2013 00:00:00	4592.737	34	11823.52	44099	Amit	2012	2
	01-03-2013 00:00:00	3793.703	33	9758.7	50721	Amit	2012	2
	04-10-2010 00:00:00	1014.92	77	12599.55	51072	Priya	2010	2
	26-05-2013 00:00:00	163.8035	8	1390.61	53285	Deepak	2012	2
	19-09-2011 00:00:00	1049.02	60	4850.76	53314	Priya	2010	0
	22-01-2011 00:00:00	-139.744	1	155.51	54497	Amit	2010	3
	16-07-2011 00:00:00	489.02	11	2003.66	86136	Amit	2010	1
	07-02-2010 00:00:00	-170.98	1	180.14	86227	Amit	2010	2

Table: Machine Sales (4,903 rows)

- Choose a **calculation method**, **Base value** and **Category** and click on **Add** to create Quick measure without any formulas.

Quick measure

 **Copilot can help** Get measure suggestions in DAX query view. [Try it now](#) 

Select a calculation to create a measure.

Total for category (filters not applied) 

Calculate the total across all values in a category ignoring any filters applied in your report. [Learn more](#)

Base value  

Category  

Add 

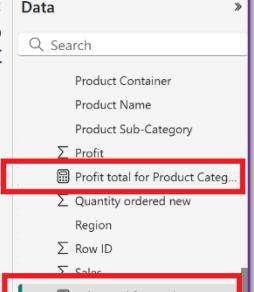
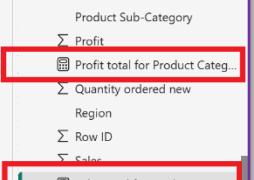
3. Use the same method to create another Quick measure for **Profit**, which will be used later for visualizations in the training on **Dynamic X & Y parameters**.

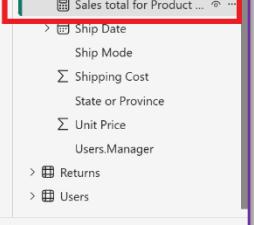
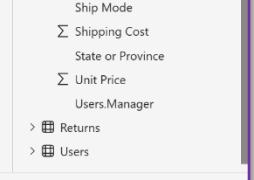
File Home Help Table tools Measure tools 

Name	Sales total for Pro...	Format	General	Data category	Uncategorized	New measure	Quick measure	
Home table	Machine Sales	\$ %	Auto	Properties	Calculations			
Structure								
Formatting								
<pre>1 Sales total for Product Category = 2 CALCULATE(3 SUM('Machine Sales'[Sales]), 4 ALL('Machine Sales'[Product Category]) 5)</pre>								
Row ID	Order Priority	Discount	Unit Price	Shipping Cost	Customer ID	Customer Name	Ship Mode	Customer Segment
151	Low	0.06	122.99	19.99	2382	Sneha Kulkarni	Regular Air	Small Business
444	Medium	0.01	162.93	19.99	640	Anita Nair	Regular Air	Consumer
567	Not Specified	0.02	1270.99	19.99	1733	Sanjay Patil	Regular Air	Small Business
1042	Critical	0.06	49.99	19.99	3011	Ramesh Choudhary	Regular Air	Corporate
1552	Low	0.09	49.99	19.99	1193	Karthik Subramaniam	Regular Air	Small Business
1846	High	0.05	420.98	19.99	2403	Sanjay Patil	Regular Air	Consumer
2136	Medium	0.07	1270.99	19.99	349	Pooja Desai	Regular Air	Home Office
3212	Medium	0.04	419.19	19.99	2491	Rahul Verma	Regular Air	Home Office
3521	Critical	0.04	420.98	19.99	2882	Rahul Verma	Regular Air	Consumer
4898	Critical	0.07	419.19	19.99	2107	Anita Nair	Regular Air	Home Office
5247	Medium	0.07	33.98	19.99	2431	Sanjay Patil	Regular Air	Consumer
5338	High	0.05	165.2	19.99	2670	Anita Nair	Regular Air	Home Office
5361	Critical	0.02	49.99	19.99	181	Amit Sharma	Regular Air	Small Business
6215	Medium	0.02	99.99	19.99	3004	Meera Srinivasan	Regular Air	Corporate
6229	Medium	0.1	367.99	19.99	68	Vikram Rao	Regular Air	Corporate
7106	High	0.04	304.99	19.99	1630	Sanjay Patil	Regular Air	Home Office
7158	Critical	0	161.55	19.99	198	Meera Srinivasan	Regular Air	Small Business
7466	Critical	0.04	165.98	19.99	1246	Meera Srinivasan	Regular Air	Home Office
7620	High	0.01	76.66	19.99	553	Rahul Verma	Regular Air	Home Office

Table: Machine Sales (4,903 rows) Column: Sales total for Product Category (0 distinct values)

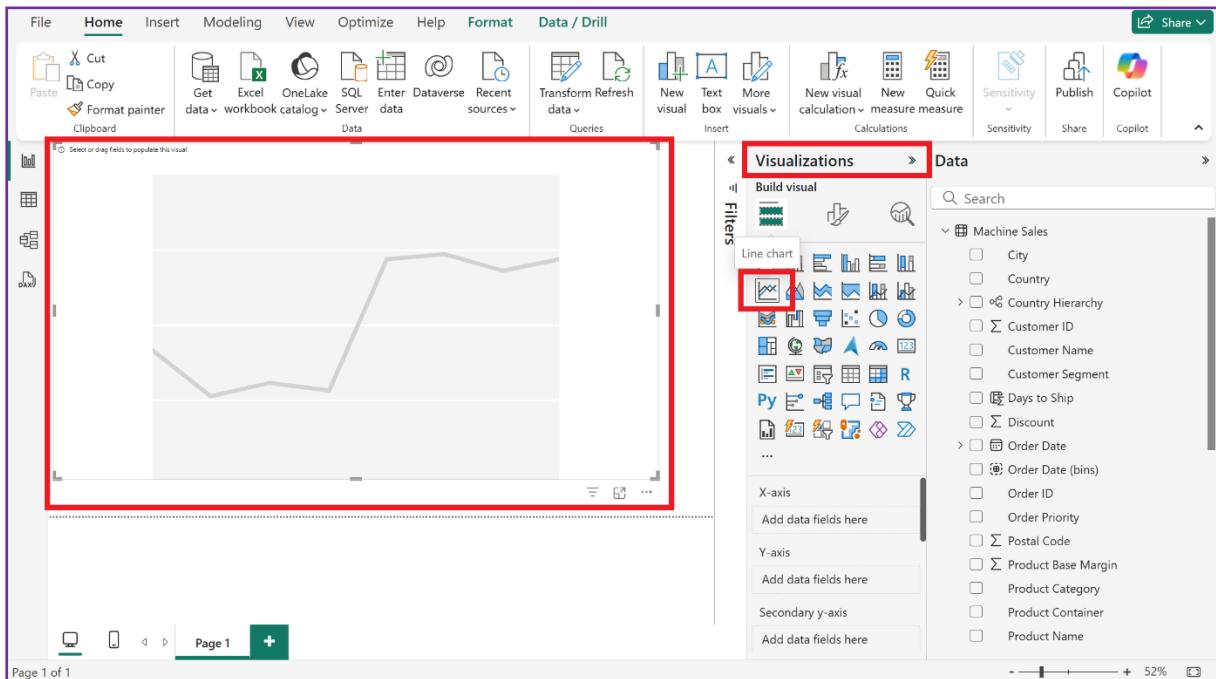
Quick measure

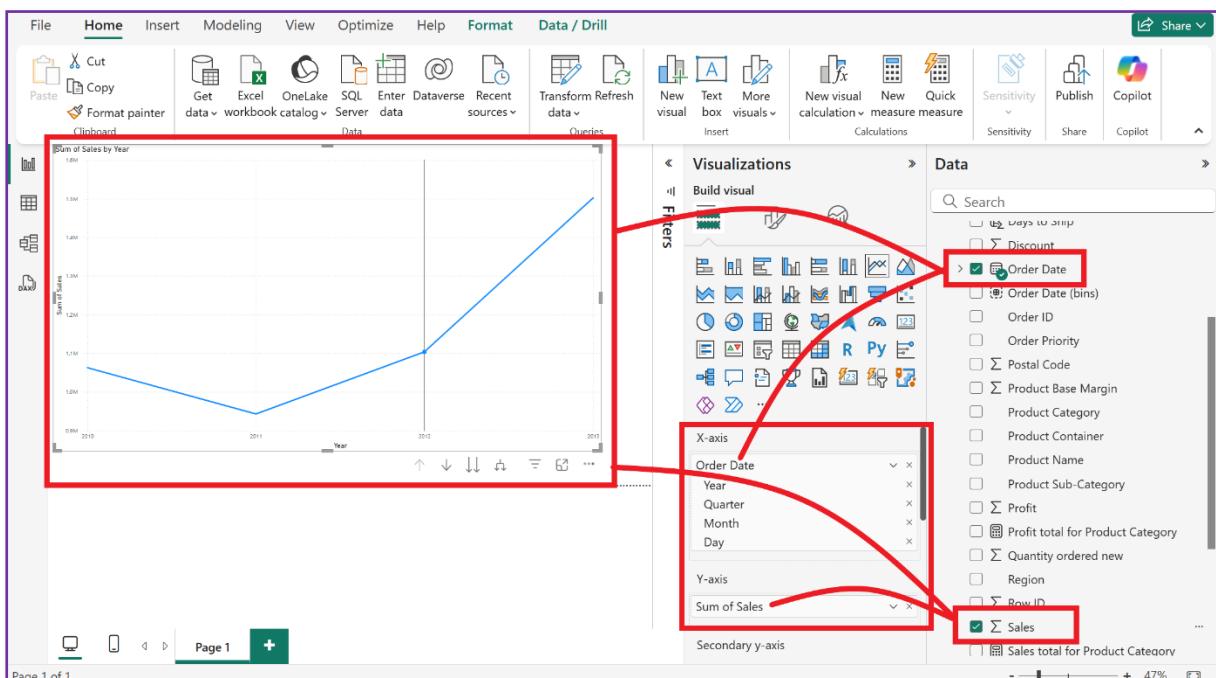
 

Visualizations & Forecasting

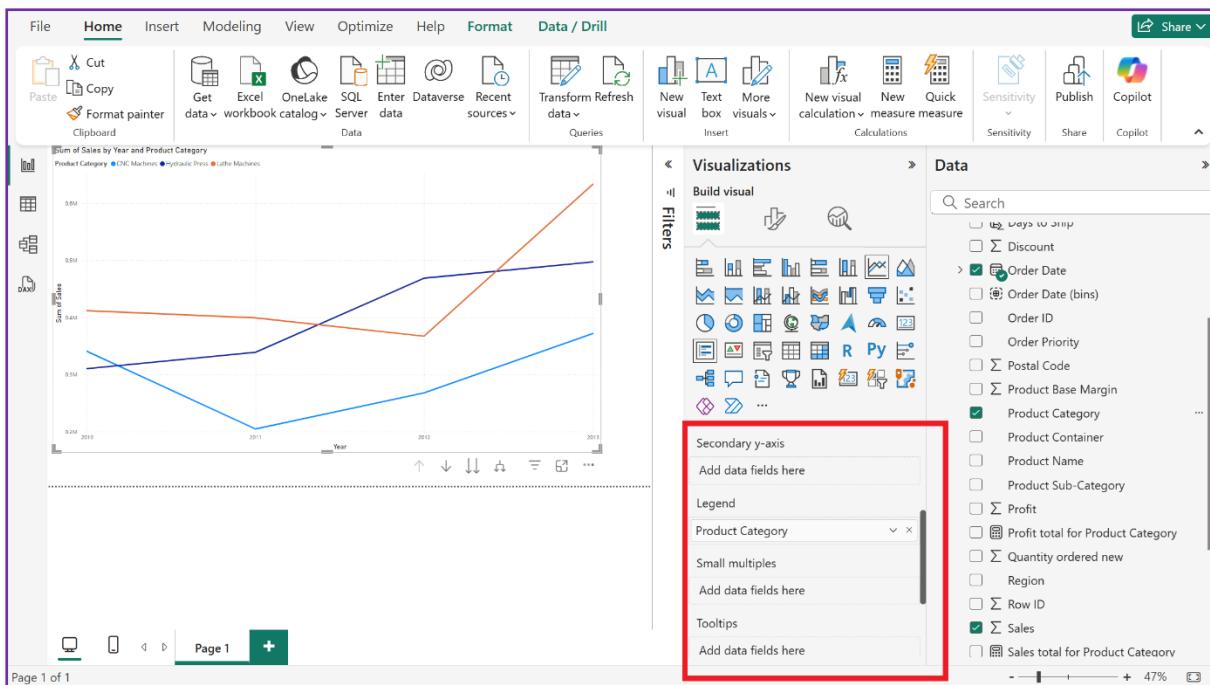
- Click on any chart under the **Visualizations** pane to create a chart window on the canvas. The chart window can be resized by clicking and dragging its edges.



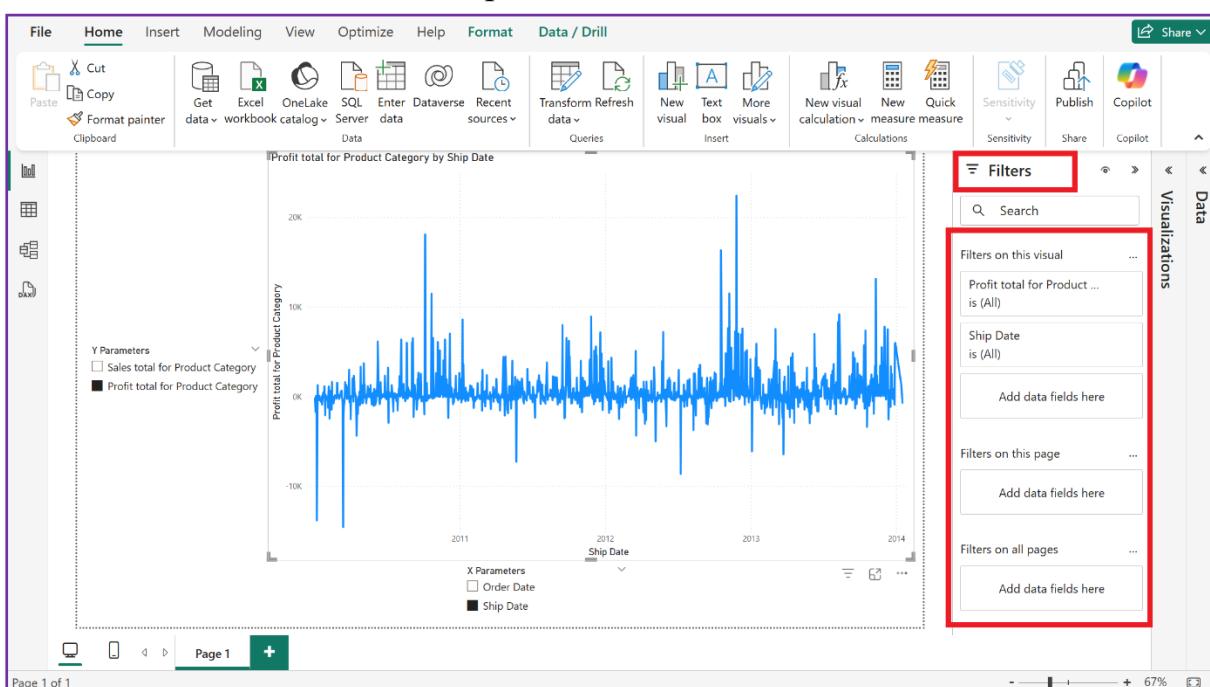
- X & Y axis parameters can be added by simply selecting the columns or dragging and dropping them onto the **X-axis** & **Y-axis** fields in the **Visualizations** pane or directly onto the chart window.



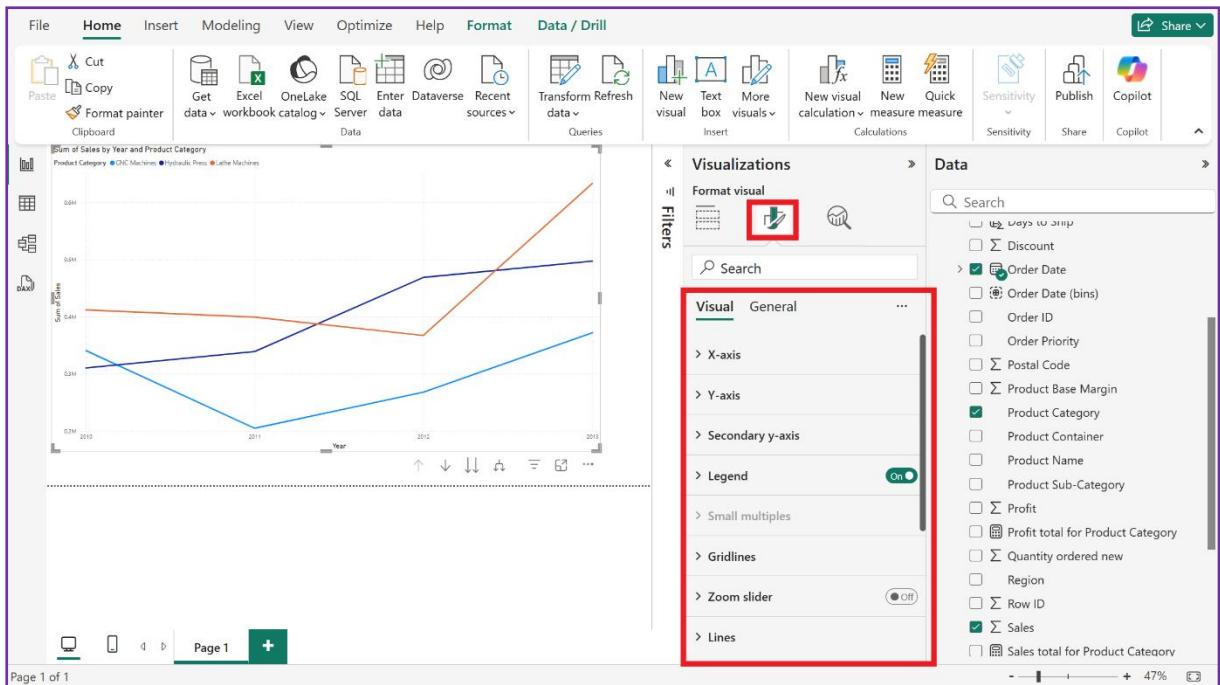
- Scroll down the **Visualizations** pane to access more options like **Secondary y-axis**, **Legend**, **Small Multiples**, **Tooltips**, and more.



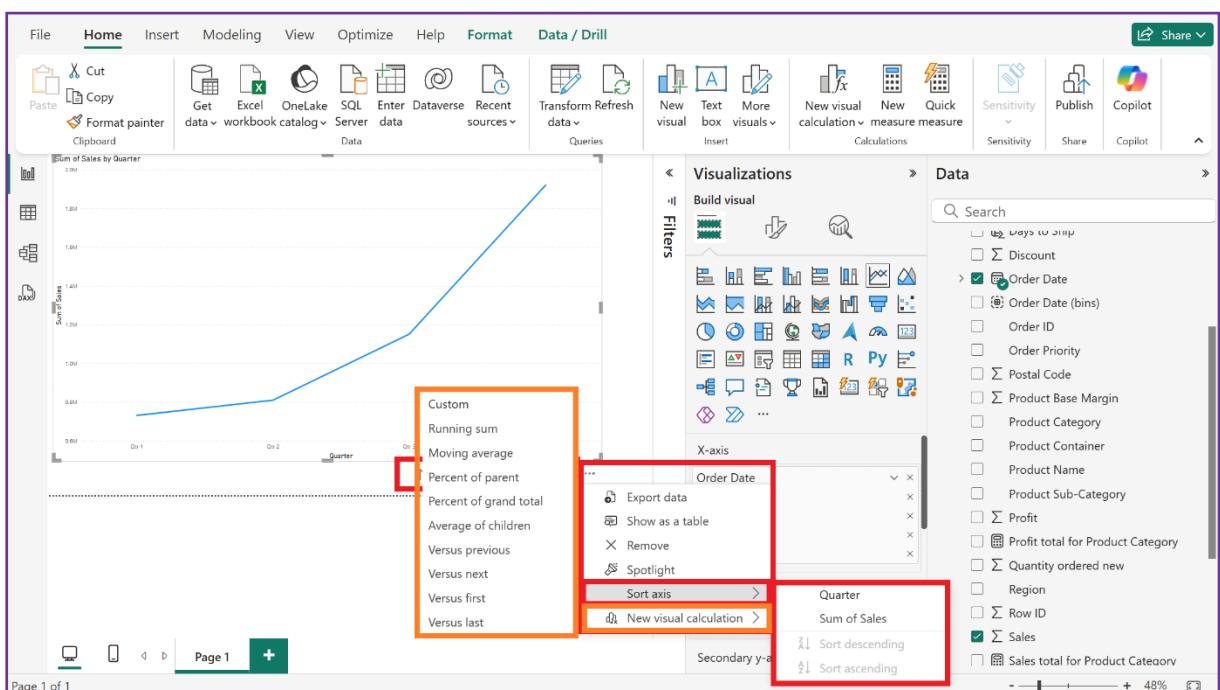
4. Filtering options are available under the **Filters pane**, allowing users to refine data visualizations based on specific conditions and criteria.



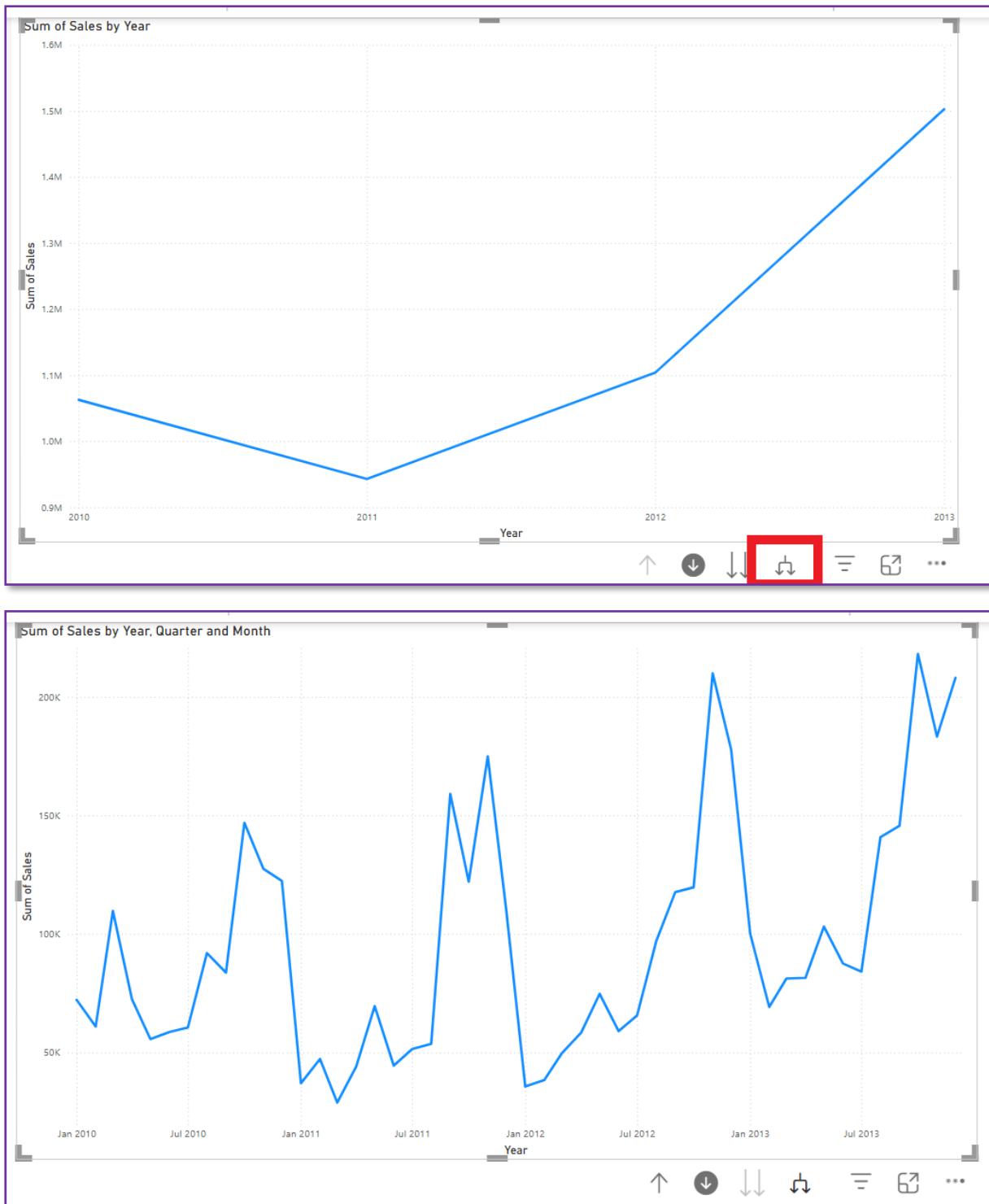
5. All styling options are available under the **Format Visual** tab in the **Visualizations** pane.



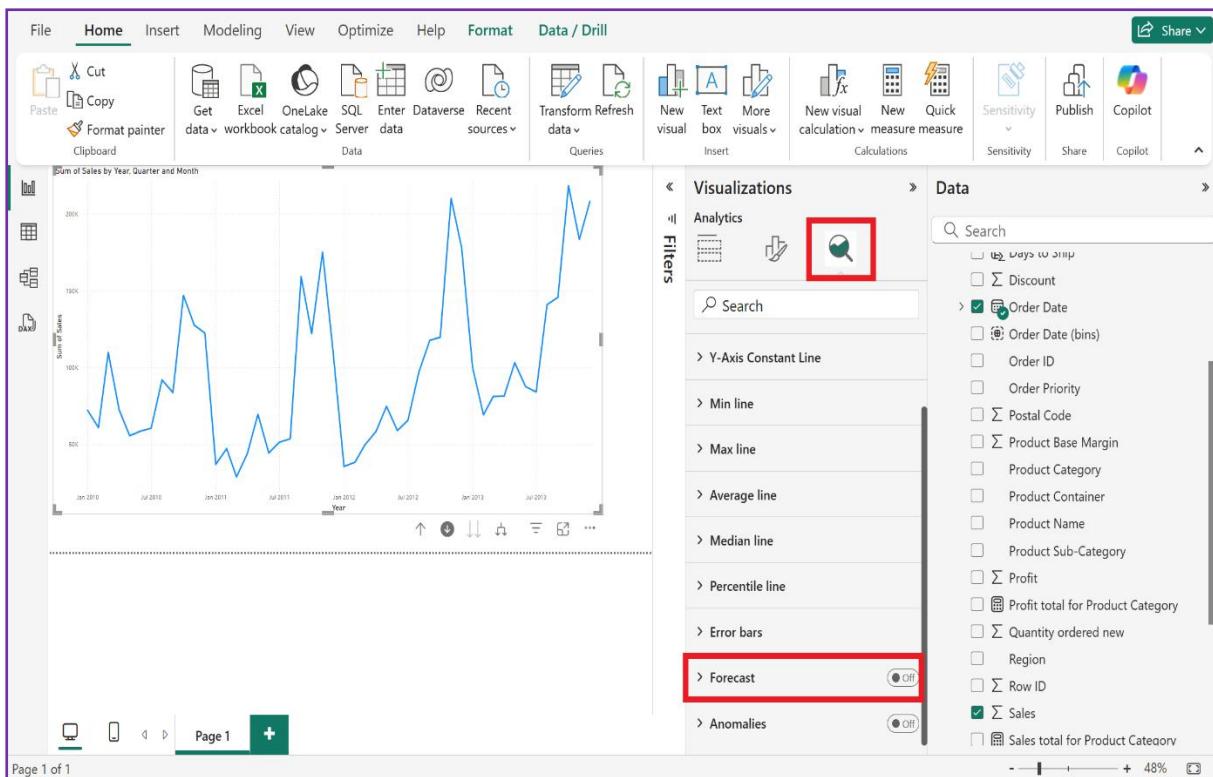
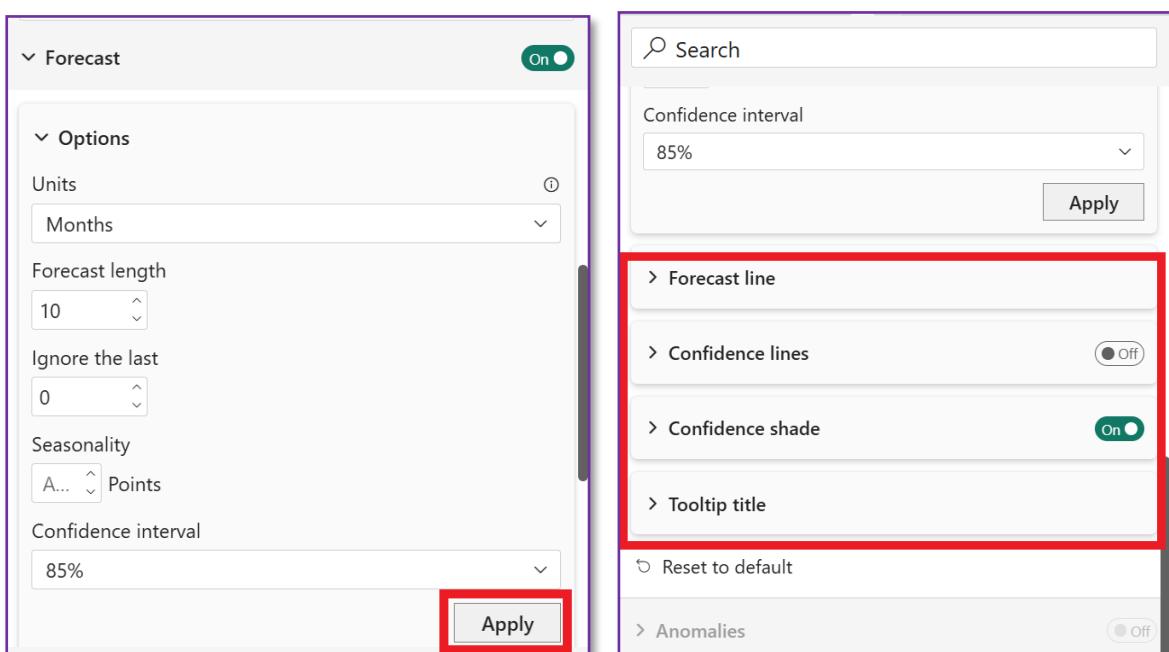
- More options are available, such as Drill up, drill using data points, Go to the next level in the hierarchy, Filters and slicers, Focus mode, and more.



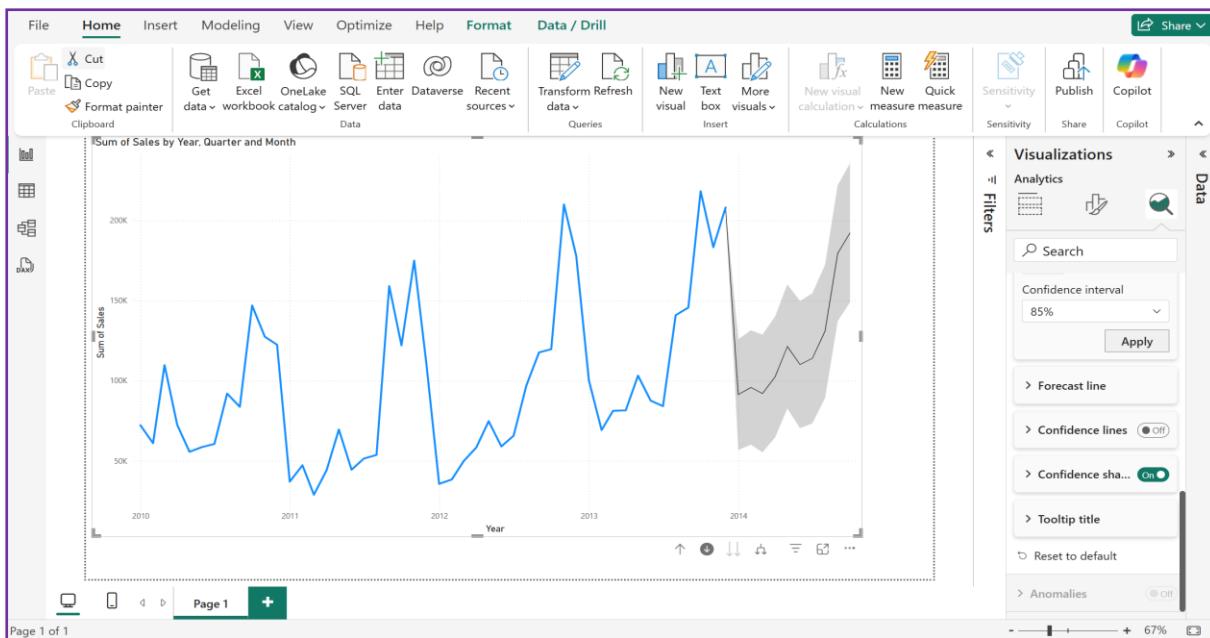
- Click on **Go to the next level in the hierarchy** to drill down and view the data at the **Month** level.



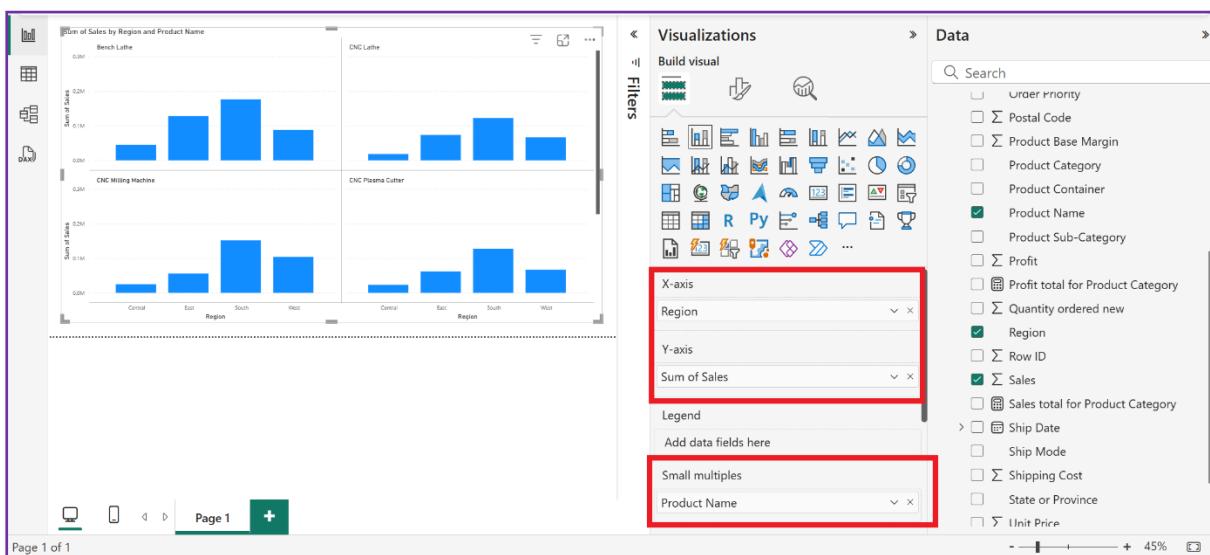
- Click on **Add further analysis to your visual**, scroll down to find the **Forecast** option, and enable it. Forecast using various parameters and click **Apply** once done. Additional styling options are also available by scrolling down the pane.

This image provides a detailed look at the "Forecast" settings and options. On the left, the "Forecast" section is open, showing settings for "Units" (Months), "Forecast length" (10), "Ignore the last" (0), "Seasonality" (A... Points), and "Confidence interval" (85%). An "Apply" button is highlighted with a red box. On the right, a "Search" field is present, followed by a list of forecast-related options: "Forecast line" (highlighted with a red box), "Confidence lines" (Off), "Confidence shade" (On), "Tooltip title", "Reset to default", and "Anomalies" (Off). Each option has a corresponding toggle switch.



9. Create a column chart displaying the **Sum of Sales** by Region, and use **Product Name** in the **Small multiples** field to generate a distinct breakdown.



Analysis

1. Right-click on any chart and select **Analyze** to generate visualizations that highlight the key factors impacting the primary metric (e.g., **Sum of Sales**), then click the **+** icon on any suggested visualization to add it to your report page.

test • Last saved: Today at 3:42 pm

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Data / Drill

Sum of Sales by Region

Region: South, West, East, Central

Sum of Sales: 2.0M, 1.5M, 1.0M, 0.5M

Contextual menu (Analyze) is highlighted.

Data

Search: Order Priority, Postal Code, Product Base Margin, Product Category, Product Container, Product Name, Product Sub-Category, Profit, Profit total for Product Category, Quantity ordered new, Region, Row ID, Sales, Sales total for Product Category, Ship Date, Ship Mode, Shipping Cost, State or Province, Unit Price

Selected filters: Region, Sales, Sales total for Product Category

Page 1 of 1

test • Last saved: Today at 3:42 pm

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Sum of Sales by Region

Region: South, West, East, Central

Sum of Sales: 2.0M, 1.5M, 1.0M, 0.5M

Contextual menu (Analyze) is highlighted.

Data

Comparing proportions

PRODUCT CONTAINER

'Wrap Bag', with 14% of records; 'Small Box', with 51.5% of records; and 'Jumbo Drum', with 7.3% of records, among others, most affect the distribution.

Sum of Sales for Wrap Bag

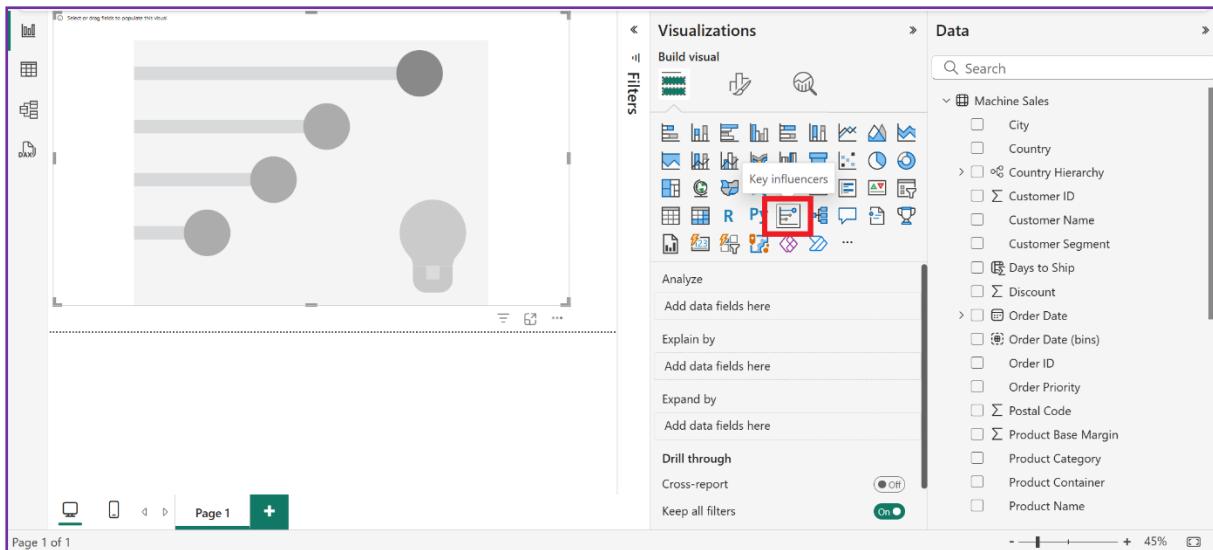
Region: South, West, East, Central

Sum of Sales: 40K, 30K, 20K, 10K, 0K

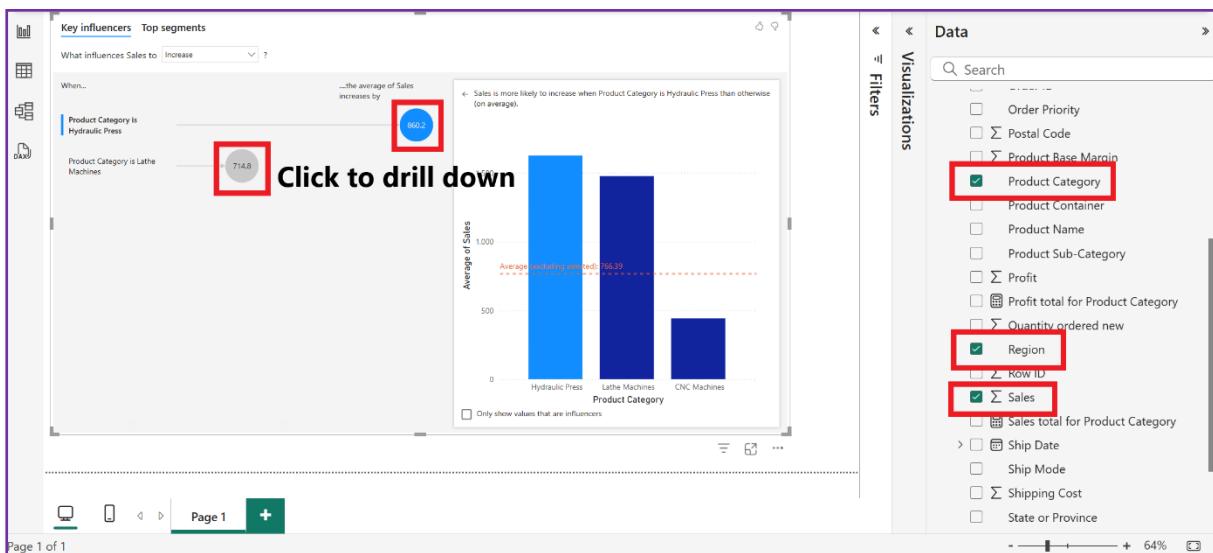
Key Influencers chart is displayed.

Page 1 of 1

- Click on the **Key Influencers** chart and add relevant parameters to automatically analyze the key factors influencing your dataset.



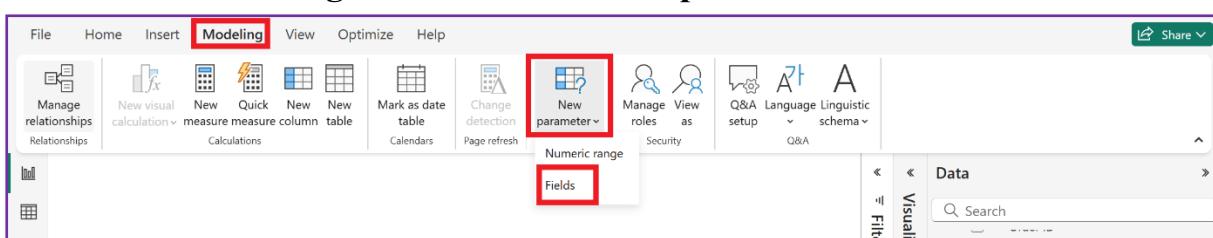
The screenshot shows a Power BI report with a bubble chart on the left. The chart has three bubbles of increasing size. On the right, the 'Visualizations' pane is open, displaying various chart and report icons. A red box highlights the 'Table' icon. The 'Data' pane on the far right lists numerous data fields under categories like Machine Sales, Customer ID, and Order Date.



The screenshot shows a Power BI report with a bar chart titled 'Key influencers Top segments'. The chart compares average sales for three product categories: Hydraulic Press, Lathe Machines, and CNC Machines. A red box highlights the 'Product Category' field in the 'Data' pane. The 'Visualizations' pane is also visible on the right.

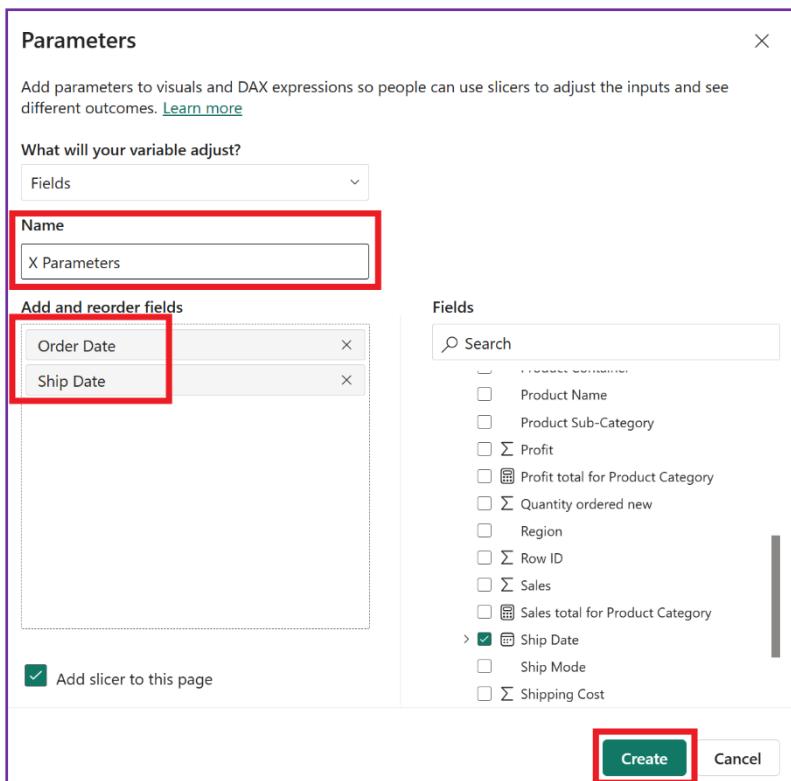
Dynamic X & Y Parameters

1. Go to the **Modeling** tab and click on **New parameter** → **Fields**.

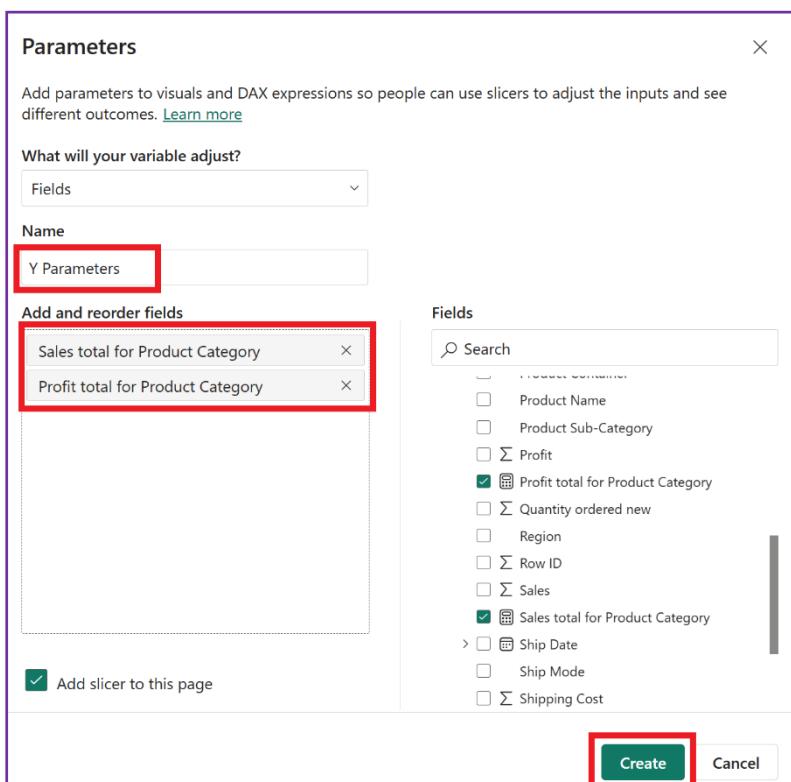


The screenshot shows the Power BI ribbon with the 'Modeling' tab highlighted. Below the ribbon, there are several buttons: 'Manage relationships', 'New visual calculation', 'New measure', 'New column', 'New table', 'Mark as date table', 'Change detection', 'Page refresh', 'New parameter' (highlighted with a red box), 'Manage roles', 'View as security', 'Q&A', 'Language setup', and 'Linguistic schema'. A red box also highlights the 'Fields' button at the bottom of the ribbon.

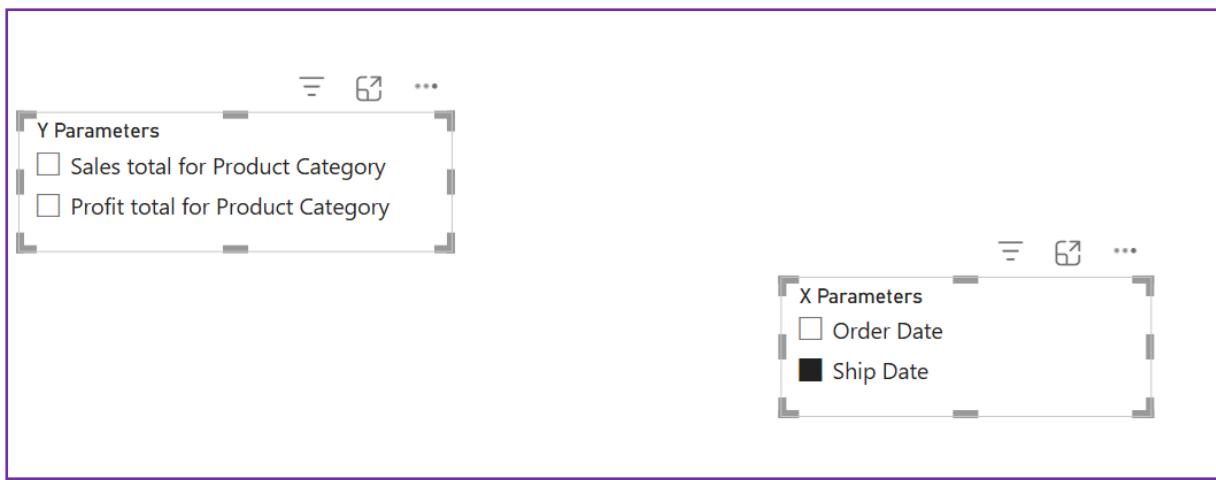
2. Create a new parameter named **X parameters** with **Order** and **Ship Date** as the fields, then click on **Create**.



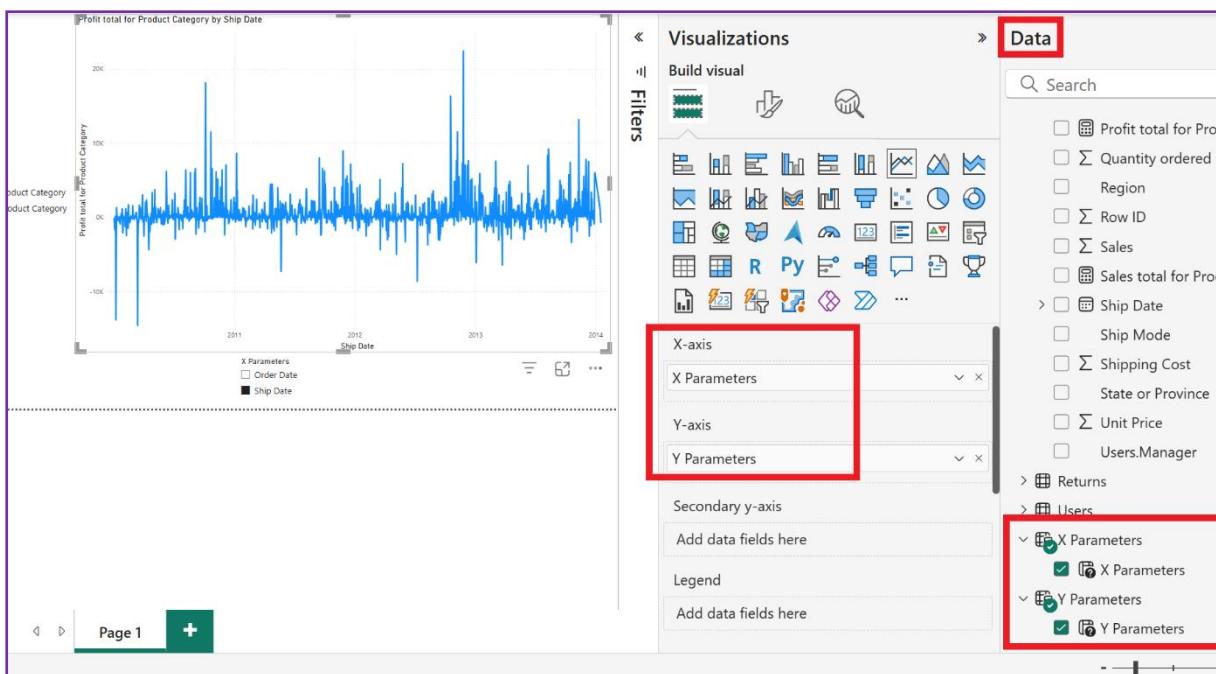
3. Similarly, create **Y parameters** using the two calculations you created earlier with **Quick measure**.



4. Two slicers will be created for **X** and **Y** parameters on the page, allowing you to dynamically filter and adjust the data displayed in your visualizations based on those parameters.



5. Create a **Line chart**, then scroll down on the **Data pane** on the right-hand side and add the **X & Y parameters** as **X & Y axis** items. This will enable dynamic slicer options to work, allowing users to interactively adjust the visualization based on the selected parameters.



Power BI Dashboard

1. Create a background template using Microsoft PowerPoint or any other design tool, then save the template as an **SVG format** image, as this format allows for better scalability without pixelation.
2. Create a new **blank page** in Power BI, go to the **Visualizations** pane, and set the background as **Report template1.svg** from the Power BI folder downloaded from the shared Google Drive.

File Home Insert Modeling View Optimize Help

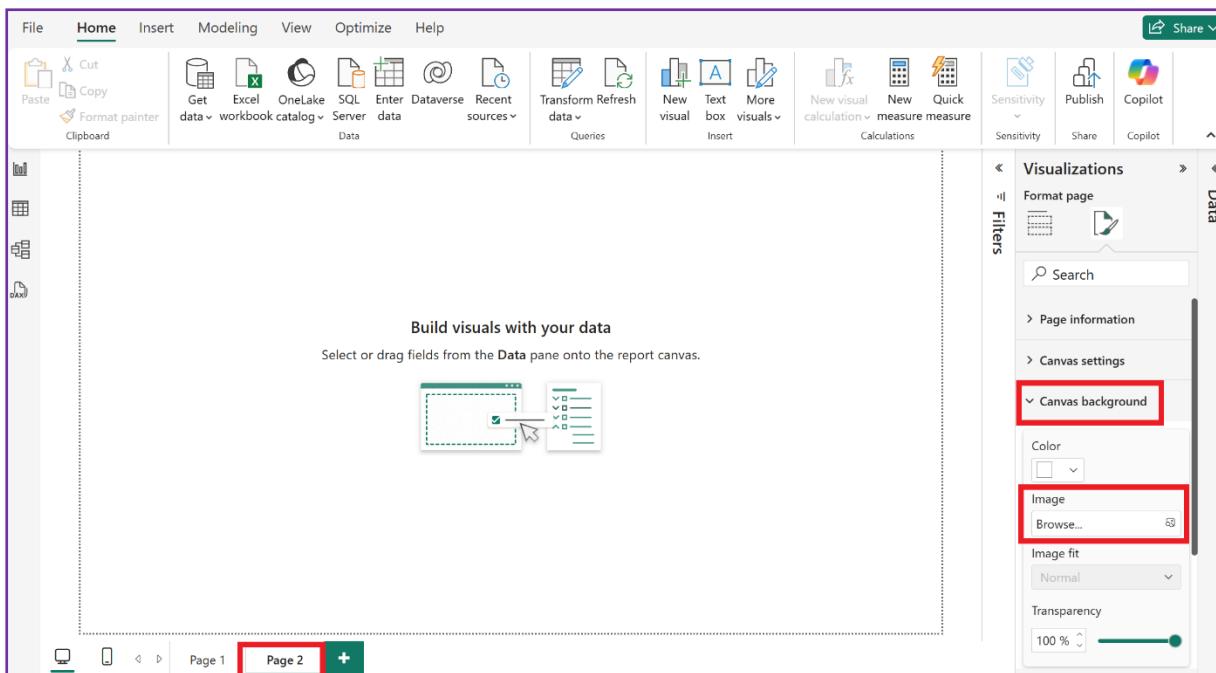
Cut Copy Format painter Clipboard

Get data Excel OneLake SQL Server Data Enter Dataverse Recent sources Transform Refresh data New visual Text box More visuals Insert New visual calculation New measure measure Calculations Sensitivity Share Publish Copilot

Build visuals with your data
Select or drag fields from the Data pane onto the report canvas.

Visualizations Format page Filters Search Page information Canvas settings **Canvas background**

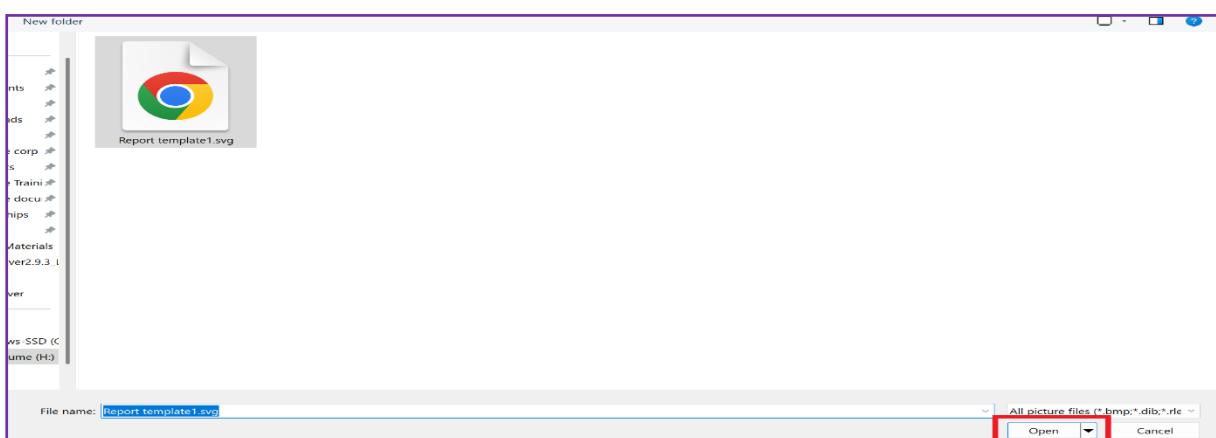
Color Image Browse... Image fit Transparency Normal 100%



New folder

Report template1.svg

File name: Report template1.svg Open Cancel



File Home Insert Modeling View Optimize Help

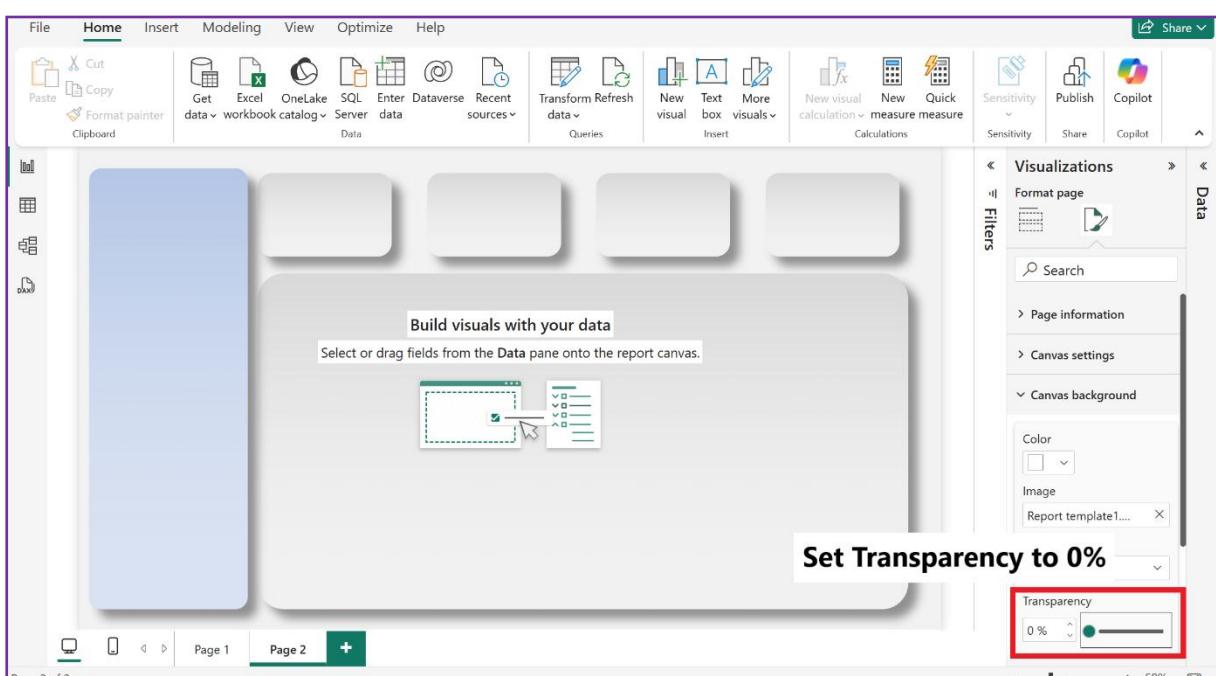
Cut Copy Format painter Clipboard

Get data Excel OneLake SQL Server Data Enter Dataverse Recent sources Transform Refresh data New visual Text box More visuals Insert New visual calculation New measure measure Calculations Sensitivity Share Publish Copilot

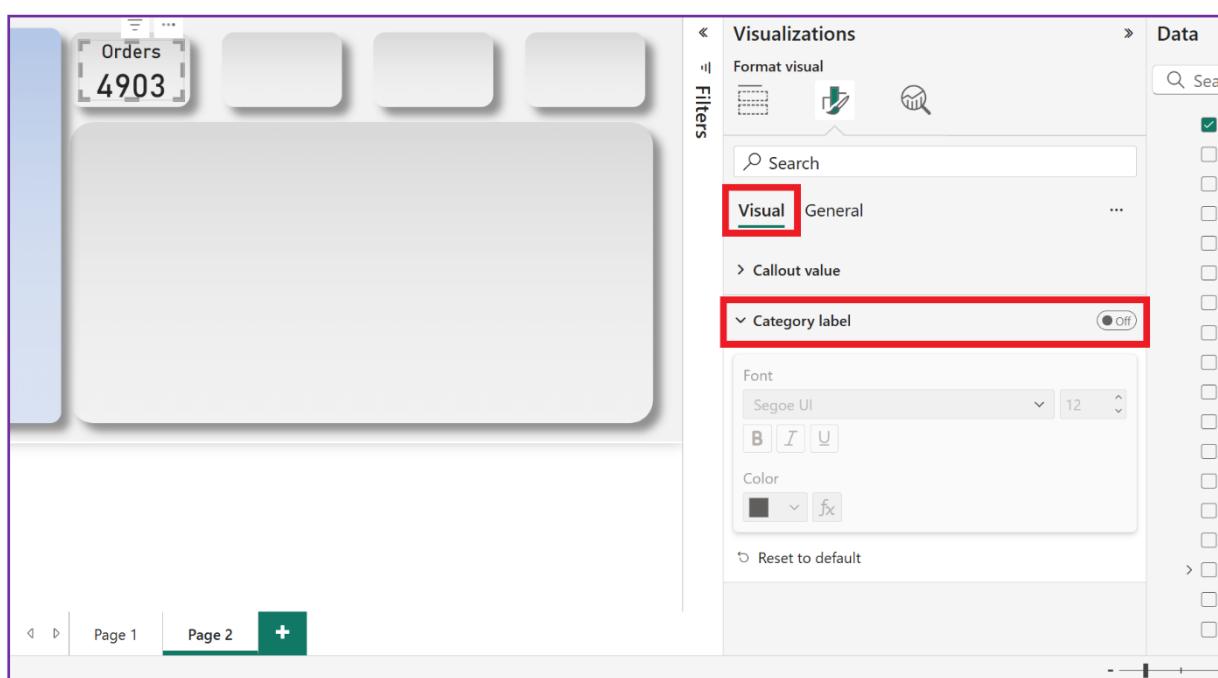
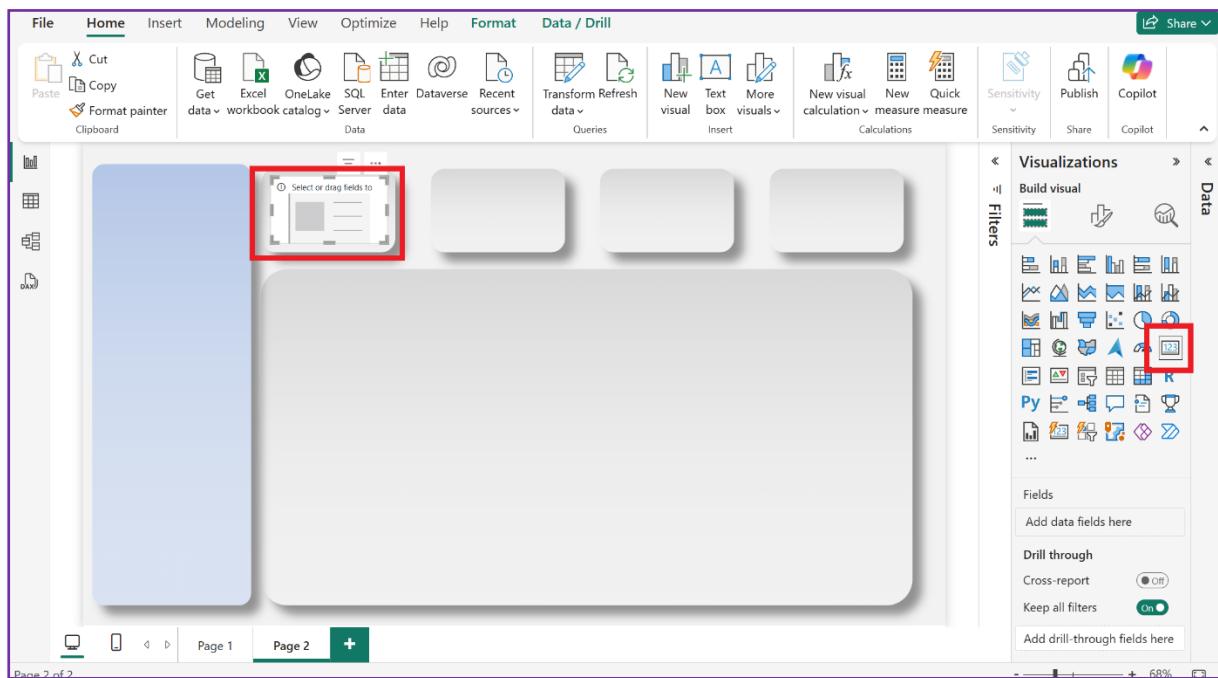
Build visuals with your data
Select or drag fields from the Data pane onto the report canvas.

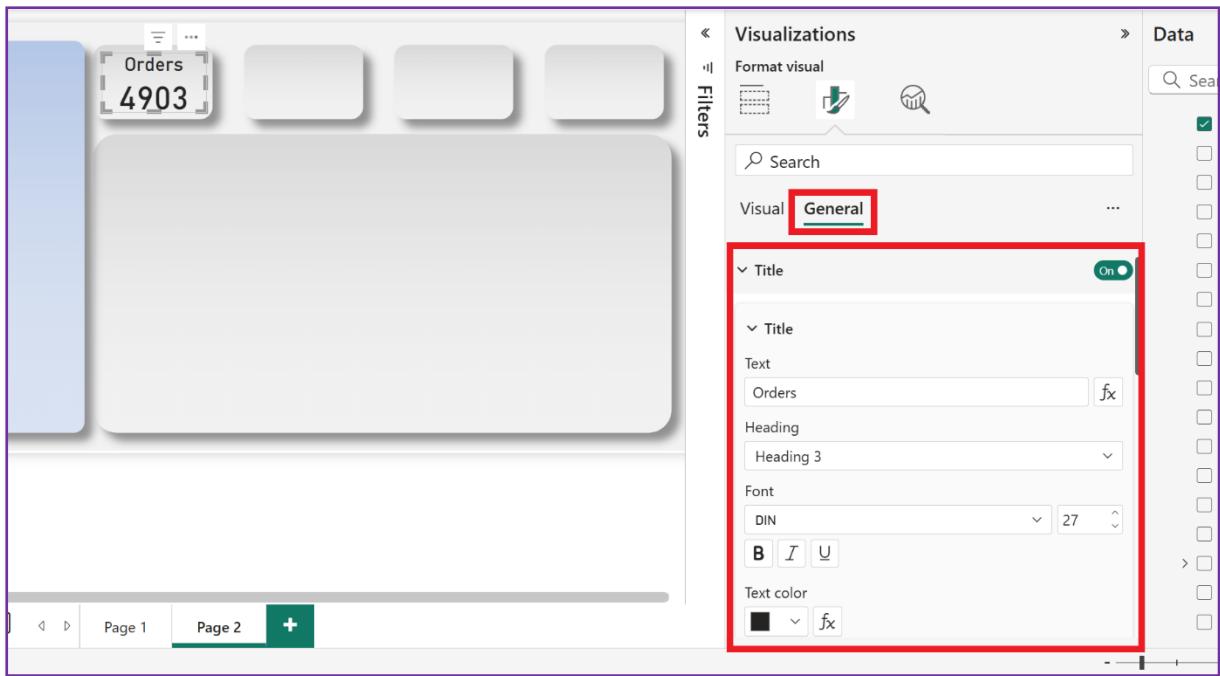
Visualizations Format page Filters Search Page information Canvas settings **Canvas background**

Color Image Report template1... Transparency 0% Set Transparency to 0% Transparency 0% 68%

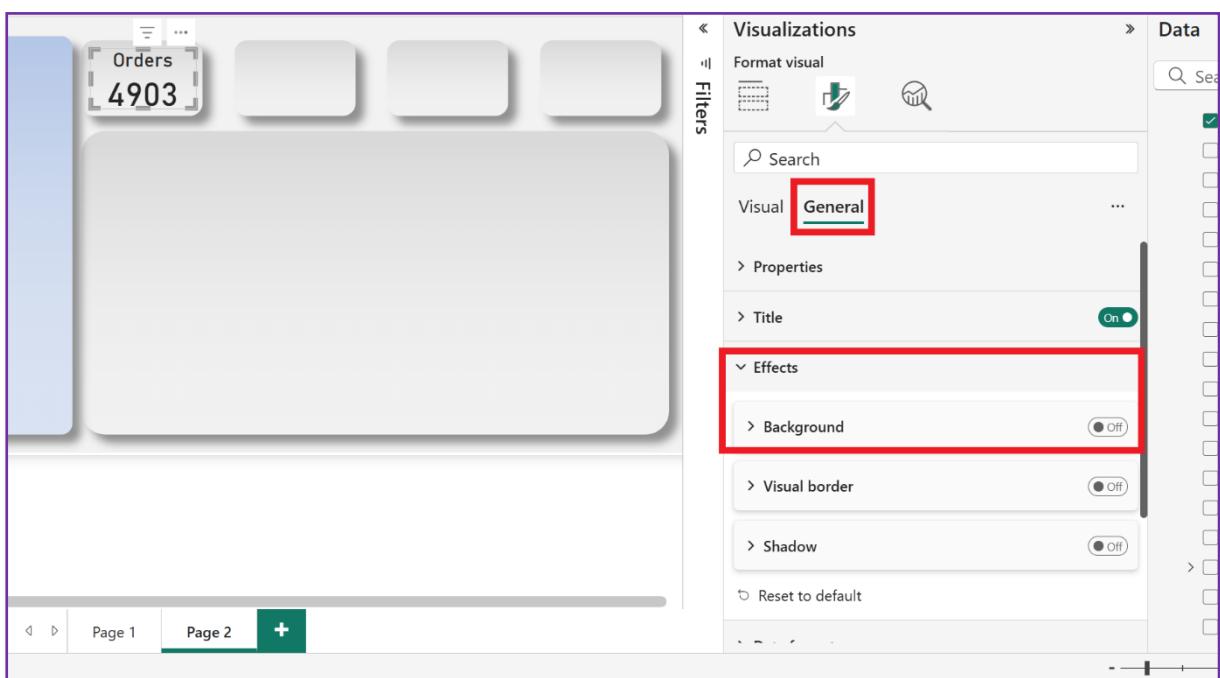


3. Create a **Card visualization** for the **Count of Order ID**, set an appropriate **Title**, and remove the **background** for a clean look.



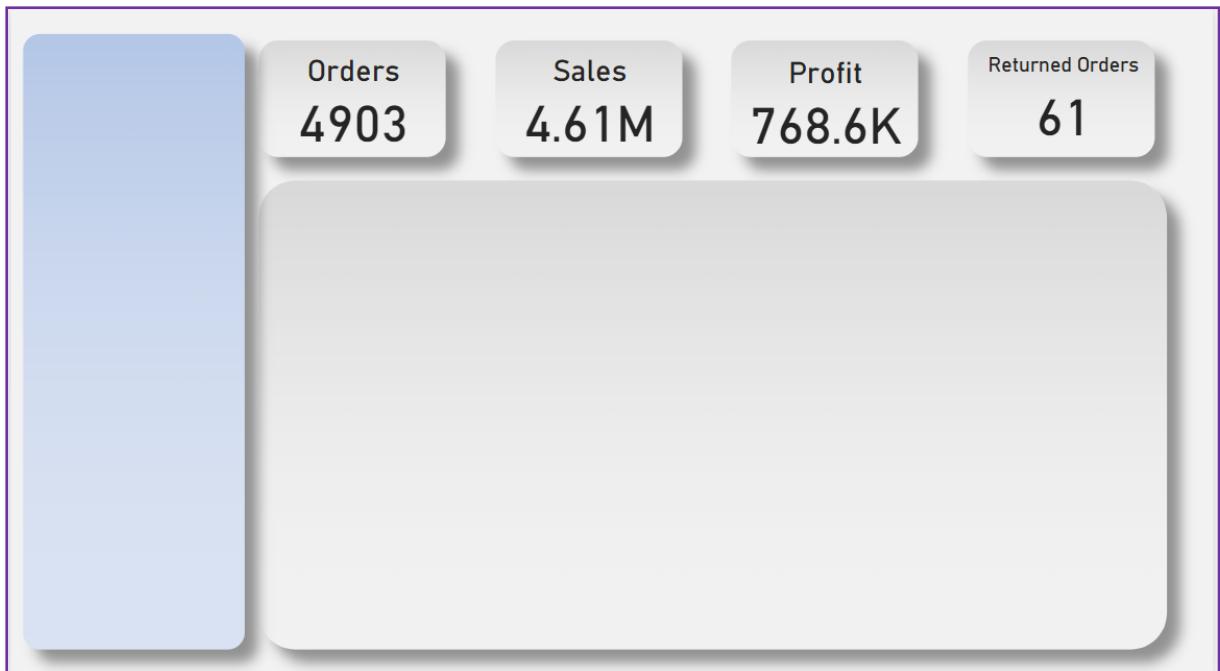


The screenshot shows the Learnlike platform's visualization editor. On the left, there's a preview area with a card visualization containing the text "Orders" and the number "4903". To the right is the "Visualizations" panel, which includes a "Format visual" toolbar with icons for grid, edit, and search. Below that is a "Search" bar and tabs for "Visual" and "General", with "General" being the active tab. A red box highlights the "Title" section under "General" settings. Inside this box, the "Text" field contains "Orders" and the "Font" dropdown is set to "Heading 3". Other visible settings include "Font" (DIN), "Text color" (black), and a "Text color" button.

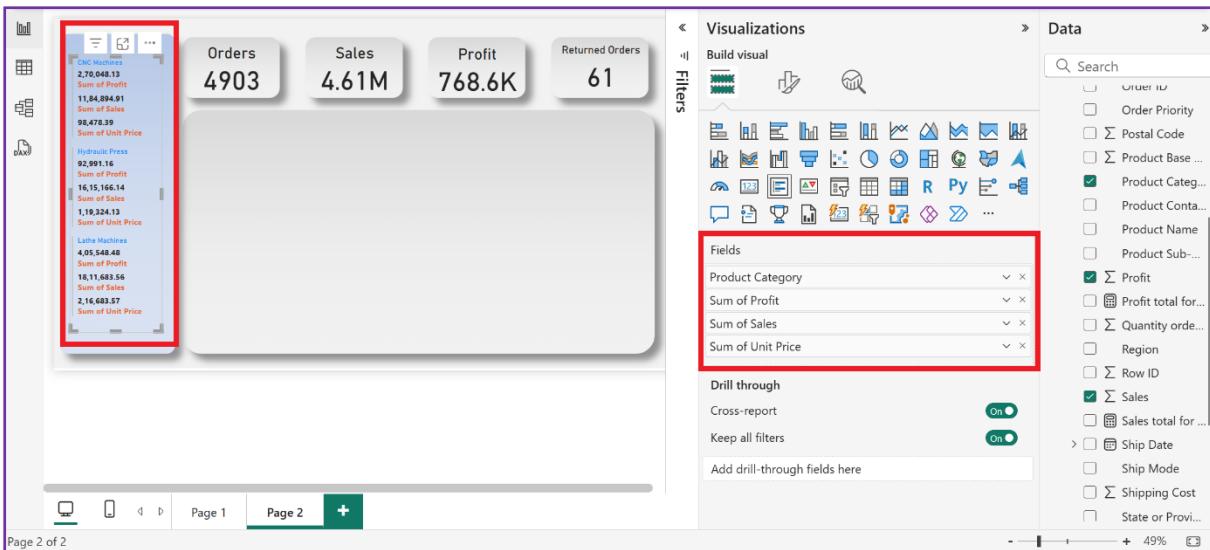


This screenshot shows the "Effects" tab of the visualization properties. A red box highlights the "Background" section. Under "Background", there is a radio button labeled "Off". Other sections shown include "Visual border" (radio button off), "Shadow" (radio button off), and a "Reset to default" button.

4. Copy and paste the same **Card visualization** into the other three boxes, then update the **parameters** and **titles** accordingly.



5. Create a **Multi-row card** in the left box by selecting **Sum of Sales, Profit, and Unit Price against Product Category**.



The screenshot shows a Power BI dashboard with four main summary cards:

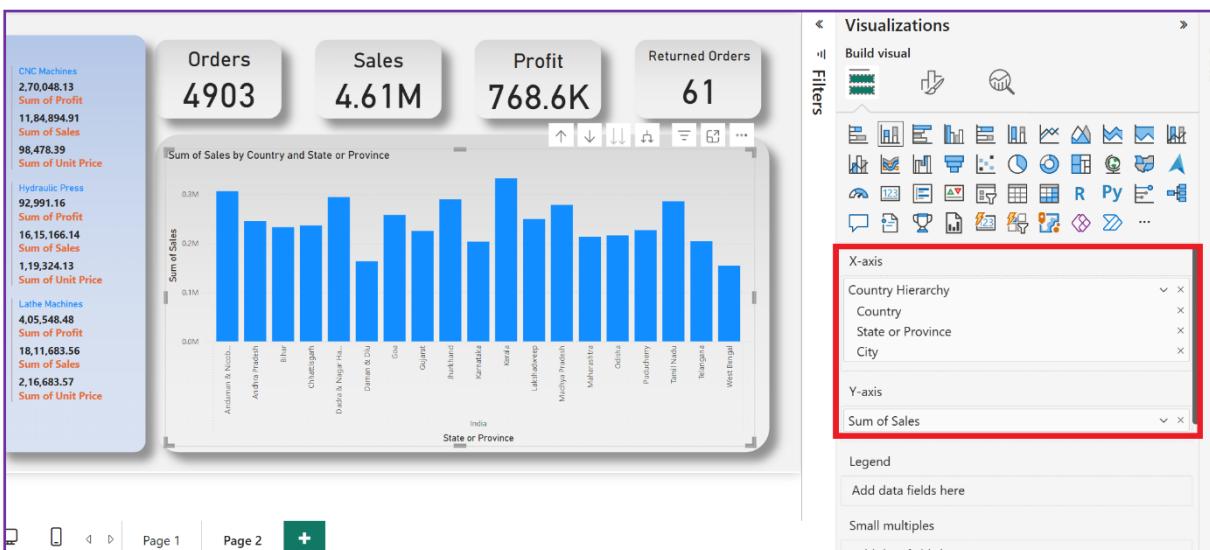
- Orders:** 4903
- Sales:** 4.61M
- Profit:** 768.6K
- Returned Orders:** 61

To the right is the **Visualizations** pane, which includes a search bar and a list of visualization icons. Below the icons is a section titled **Fields** with the following selected items:

- Product Category
- Sum of Profit
- Sum of Sales
- Sum of Unit Price

At the bottom of the pane, there are sections for **Drill through**, **Cross-report**, and **Keep all filters**, each with an "On" toggle switch.

6. Create a **Column** chart with **Sum of Sales** plotted against the **Country Hierarchy** that was created earlier.



The screenshot shows a Power BI dashboard with the same four summary cards as the previous screenshot. Below them is a chart titled "Sum of Sales by Country and State or Province". The chart displays blue bars representing sales volume for various countries. The X-axis is labeled "Country Hierarchy" and lists countries like Australia & New Zealand, India, China, United States, Germany, France, Italy, Spain, United Kingdom, Canada, Mexico, Brazil, Argentina, Chile, and South Africa. The Y-axis is labeled "Sum of Sales" and ranges from 0.0M to 0.3M. The chart is set against a background map of India.

To the right is the **Visualizations** pane, which includes a search bar and a list of visualization icons. Below the icons is a section titled **X-axis** with the following selected items:

- Country Hierarchy
- Country
- State or Province
- City

Below the X-axis section is a **Y-axis** section with the item "Sum of Sales" selected. At the bottom of the pane, there are sections for **Legend**, **Add data fields here**, and **Small multiples**.

7. Go to **View → Bookmarks** and create three bookmarks: **Country (Co)**, **State (St)**, and **City (Cy)**. Drill down to each view, right-click on the bookmark, and choose **Update** to save the bookmark with the current chart data.

View

Themes

Filters Bookmarks Selection Performance analyzer Sync slivers

Add

Use bookmarks to capture key data for yourself and others.

1. Filter data to get to the state you want to capture.
2. Click Add.

Bookmarks

Build visual

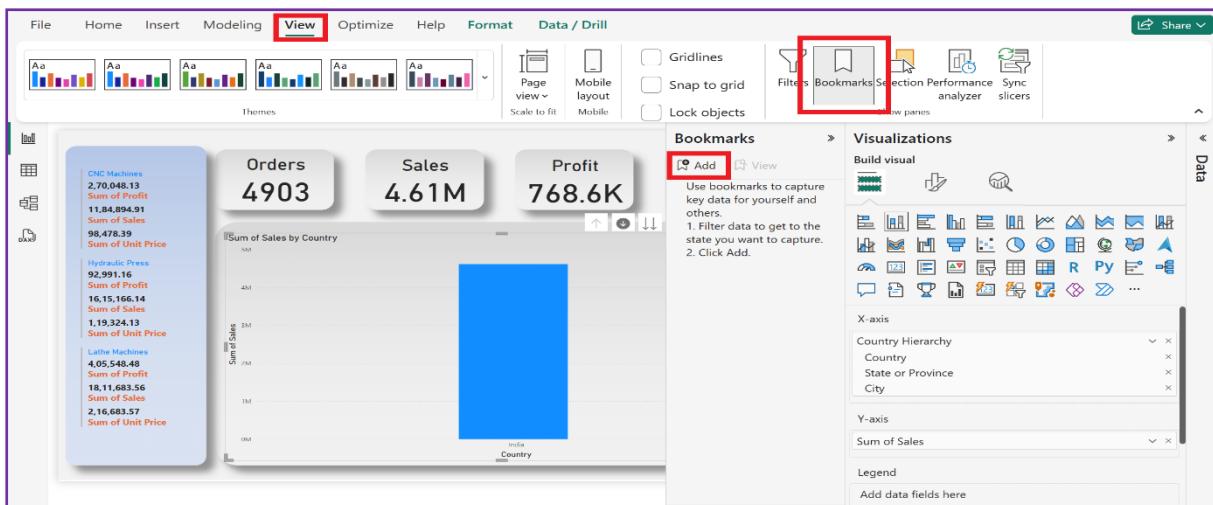
Visualizations

X-axis

Y-axis

Legend

Add data fields here



Orders 4903 Sales 4.61M Profit 768.6K Returned Orders 61

Sum of Sales by Country

Sum of Sales

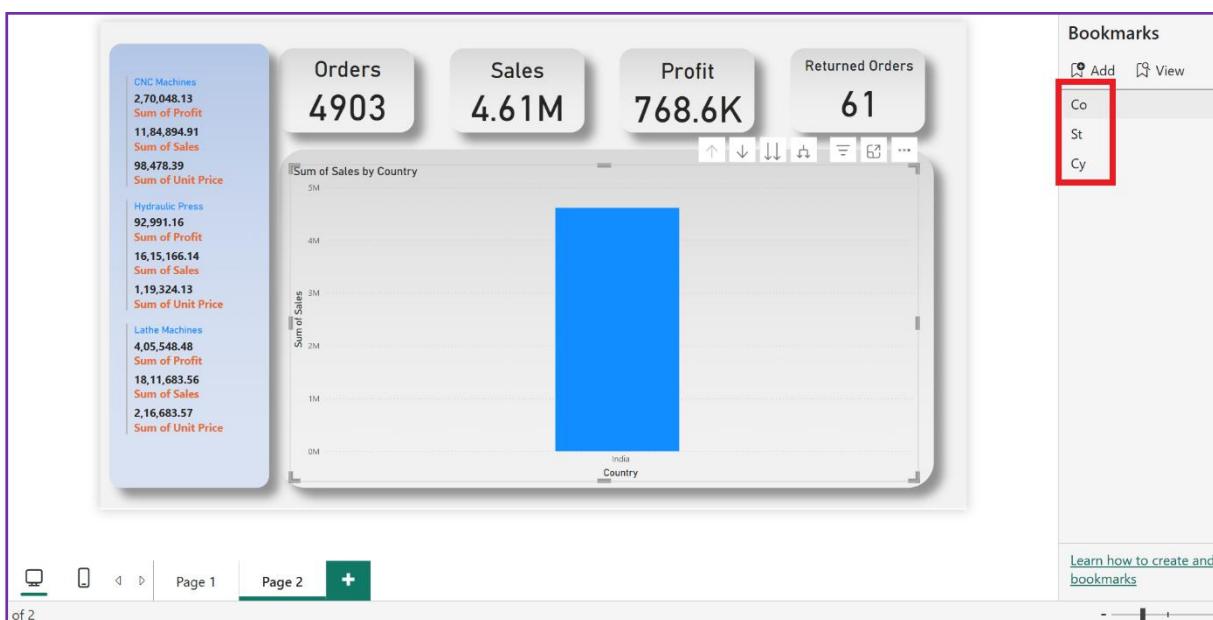
India Country

Bookmarks

Add

Co
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Cy

Learn how to create and bookmarks



Orders 4903 Sales 4.61M Profit 768.6K Returned Orders 61

Sum of Sales by Country

Sum of Sales

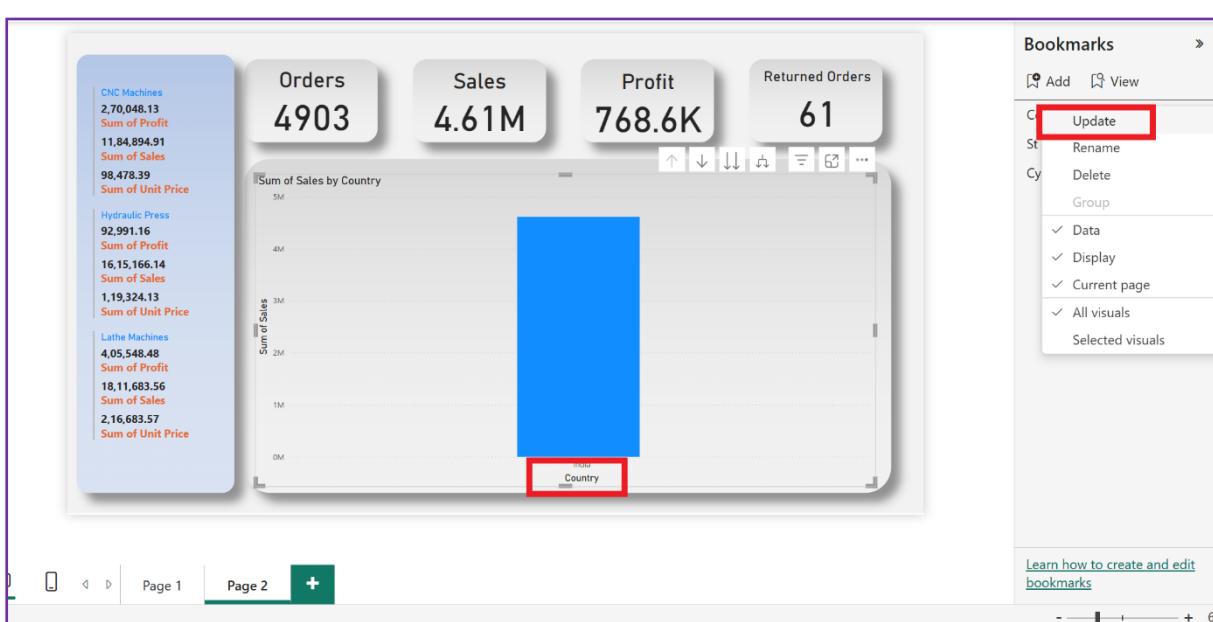
India Country

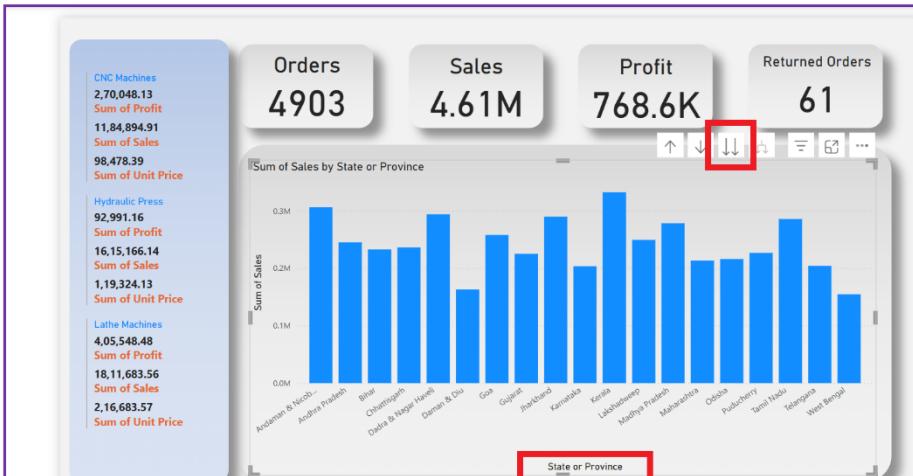
Bookmarks

Update

Co
St
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Rename
Delete
Group
✓ Data
✓ Display
✓ Current page
✓ All visuals
Selected visuals

Learn how to create and edit bookmarks





Bookmarks

- Add
- View
- Co
- St
- Cv
- Update** (highlighted)
- Rename
- Delete
- Group
- Data
- Display
- Current page
- All visuals
- Selected visuals

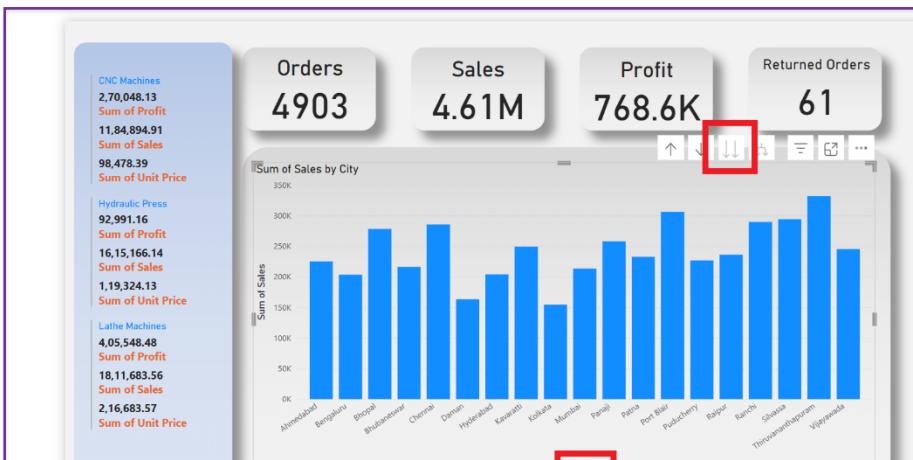
Learn how to create and edit bookmarks

Orders: 4903 | Sales: 4.61M | Profit: 768.6K | Returned Orders: 61

Sum of Sales by State or Province

State or Province	Sum of Sales
Andaman & Nicobar	0.3M
Andhra Pradesh	0.28M
Bihar	0.25M
Chhattisgarh	0.25M
Dadra & Nagar Haveli	0.28M
Daman & Diu	0.18M
Goa	0.25M
Gujarat	0.24M
Jharkhand	0.28M
Karnataka	0.22M
Kerala	0.32M
Lakshadweep	0.25M
Madhya Pradesh	0.28M
Maharashtra	0.22M
Odisha	0.22M
Puducherry	0.25M
Tamil Nadu	0.28M
Telangana	0.22M
West Bengal	0.18M

Page 1 | Page 2 | +



Bookmarks

- Add
- View
- Co
- St
- Cv
- Update** (highlighted)
- Rename
- Delete
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- Current page
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- Selected visuals

Learn how to create and edit bookmarks

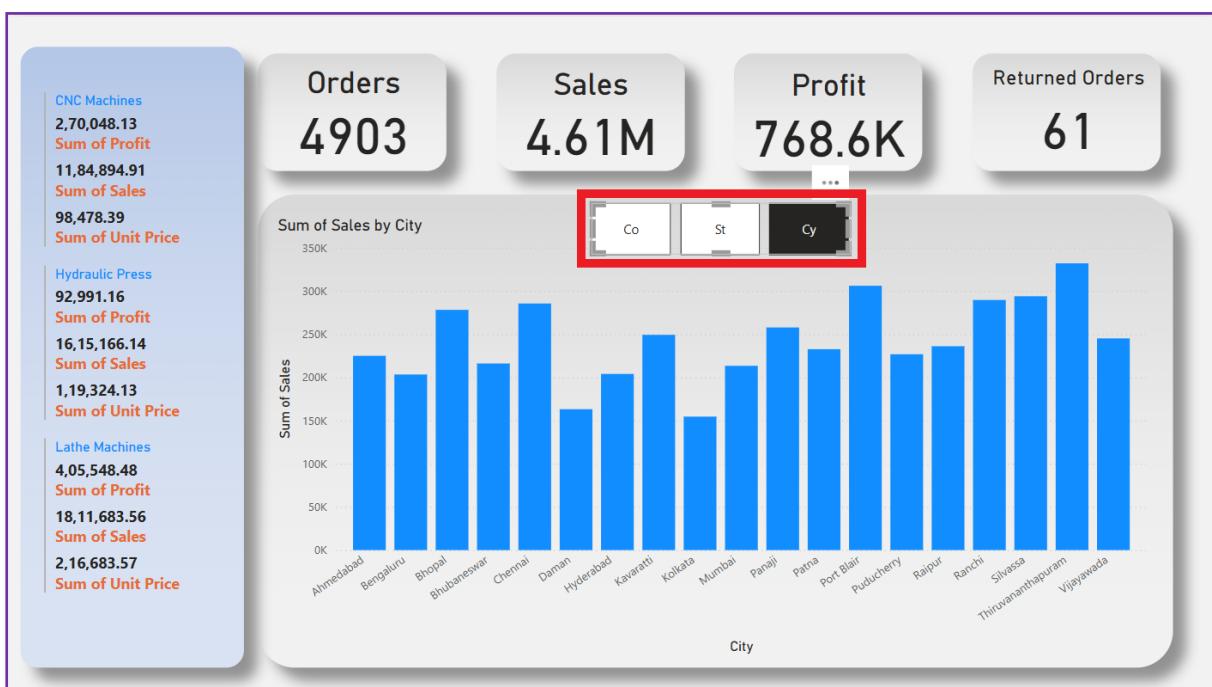
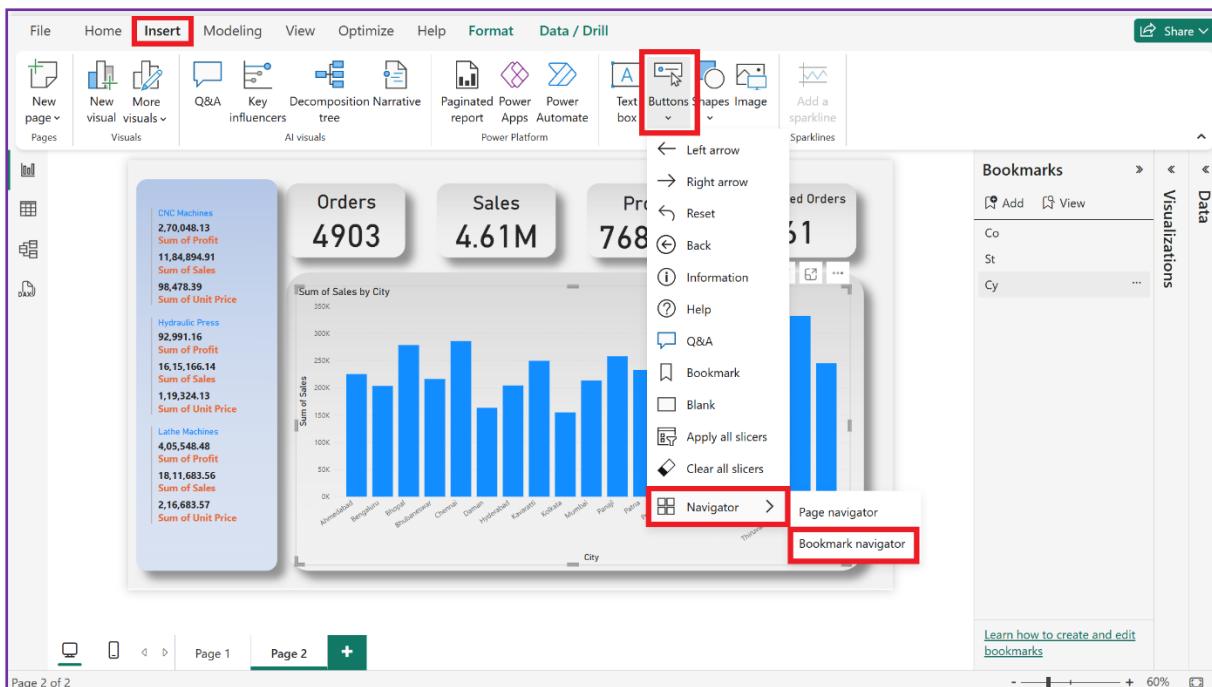
Orders: 4903 | Sales: 4.61M | Profit: 768.6K | Returned Orders: 61

Sum of Sales by City

City	Sum of Sales
Ahmedabad	200K
Bengaluru	200K
Bhopal	250K
Bhubaneswar	200K
Chennai	280K
Damian	180K
Hyderabad	200K
Kavur	220K
Kollam	180K
Mumbai	200K
Patna	250K
Port Blair	300K
Puducherry	200K
Raipur	220K
Ranchi	280K
Silvassa	280K
Tirupuramthappuram	320K
Vijayawada	220K

Page 1 | Page 2 | +

8. Go to **Insert → Buttons → Navigator → Bookmark navigator** to insert the created bookmarks onto the page. Hold the **Ctrl** key and click on each bookmark to switch between different chart views.



9. Use the **Format navigator** for styling options. Different styling options are available for **Default**, **Hover**, **Press**, and **Selected** states of the **Bookmark navigator**.

Format navigator

Search:

Visual General

Shape

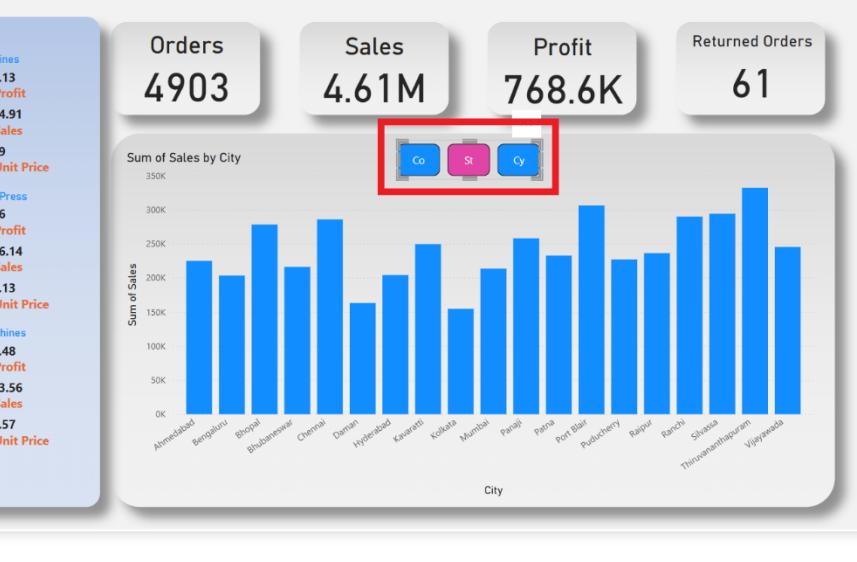
Shape: Rounded Rectangle
Rounded Corners: 20 %

Reset to default

Rotation

Style

Apply settings to State: Default



Orders: 4903 | Sales: 4.61M | Profit: 768.6K | Returned Orders: 61

Sum of Sales by City

City	Sum of Sales
Ahmedabad	220K
Bengaluru	210K
Bhopal	270K
Bhubaneswar	210K
Chennai	280K
Daman	160K
Hyderabad	210K
Kavaratti	240K
Kolkata	160K
Mumbai	210K
Panaji	250K
Patna	220K
Port Blair	300K
Puducherry	220K
Rajpur	230K
Ranchi	270K
Silvassa	270K
Thiruvananthapuram	300K
Vijayawada	240K

Page 1 | Page 2 | +

Format navigator

Search:

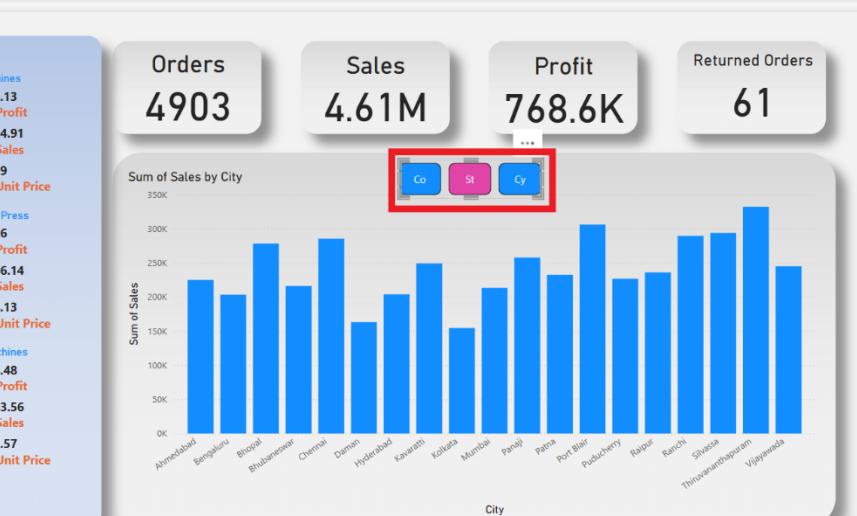
Visual General

Rotation

Style

Apply settings to State: Default

B I U



Orders: 4903 | Sales: 4.61M | Profit: 768.6K | Returned Orders: 61

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Rajpur	230K
Ranchi	270K
Silvassa	270K
Thiruvananthapuram	300K
Vijayawada	240K



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Puducherry	220K
Rajpur	230K
Ranchi	270K
Silvassa	270K
Thiruvananthapuram	300K
Vijayawada	240K

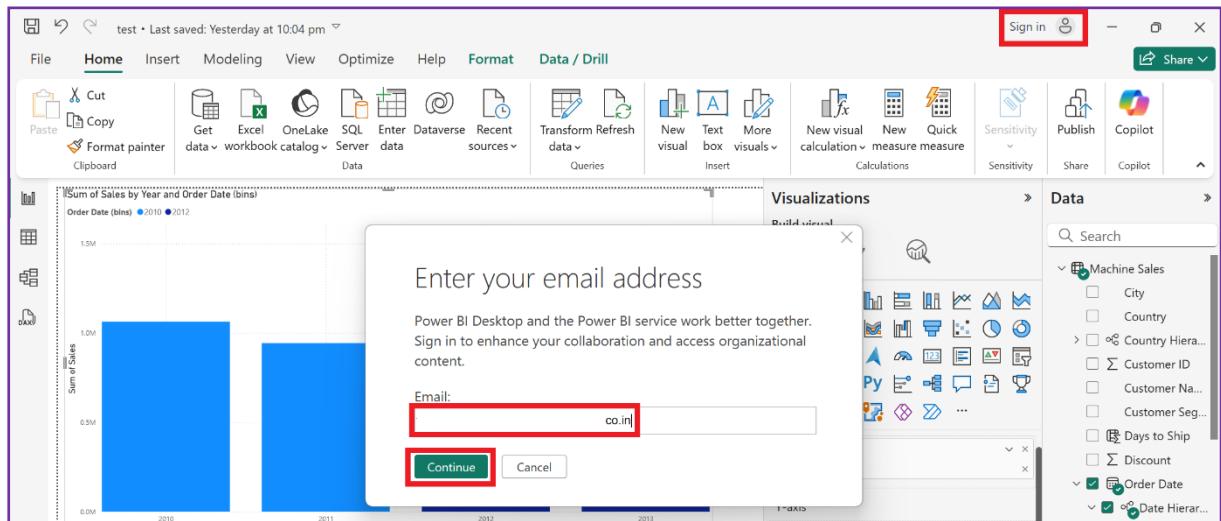
CNC Machines: 2,70,048.13 | Sum of Profit: 11,84,894.91 | Sum of Sales: 98,478.39 | Sum of Unit Price: 1,19,324.13

Hydraulic Press: 92,991.16 | Sum of Profit: 16,15,166.14 | Sum of Sales: 18,11,683.56 | Sum of Unit Price: 4,05,548.48

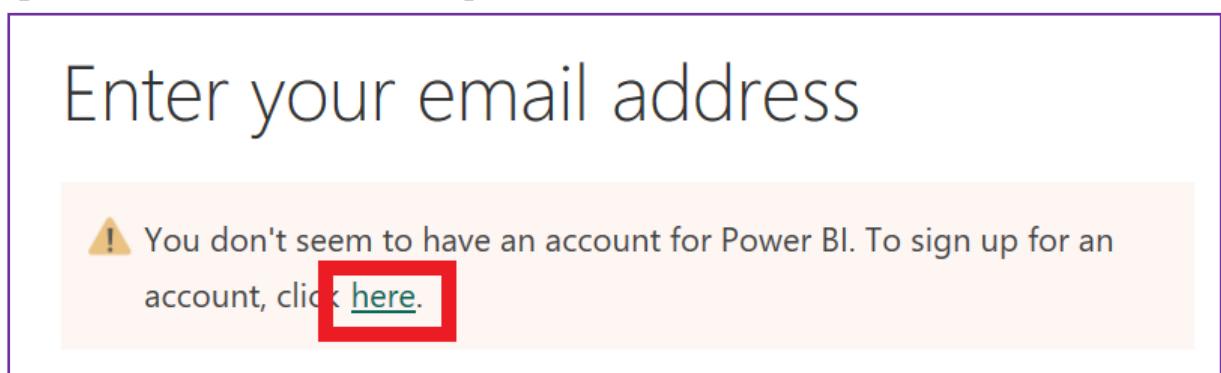
Lathe Machines: 4,05,548.48 | Sum of Profit: 18,11,683.56 | Sum of Sales: 2,16,683.57 | Sum of Unit Price: 18,11,683.56

Publish & Share

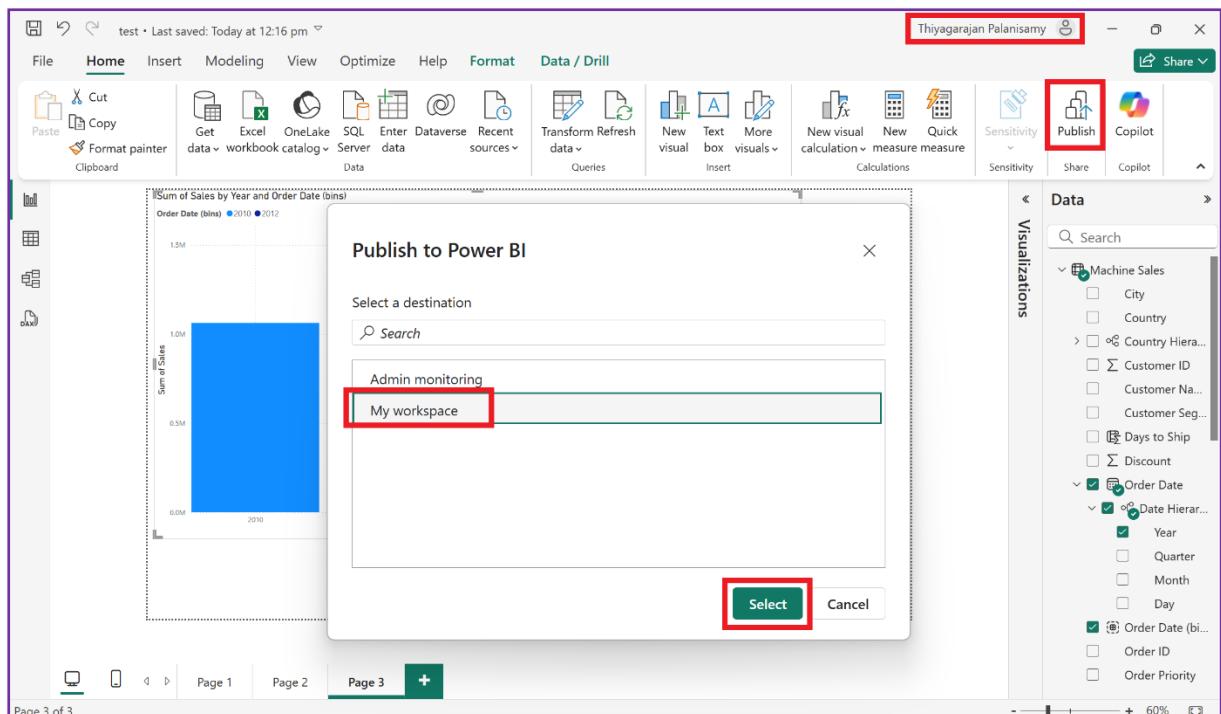
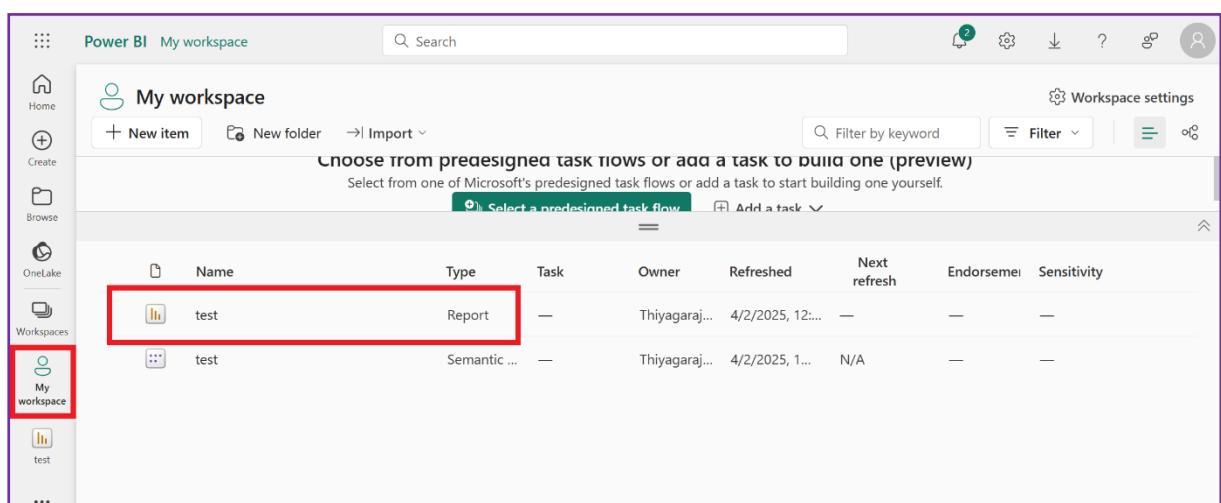
1. Sign in to Power BI using your **organization or institution email ID** to access and manage your reports.



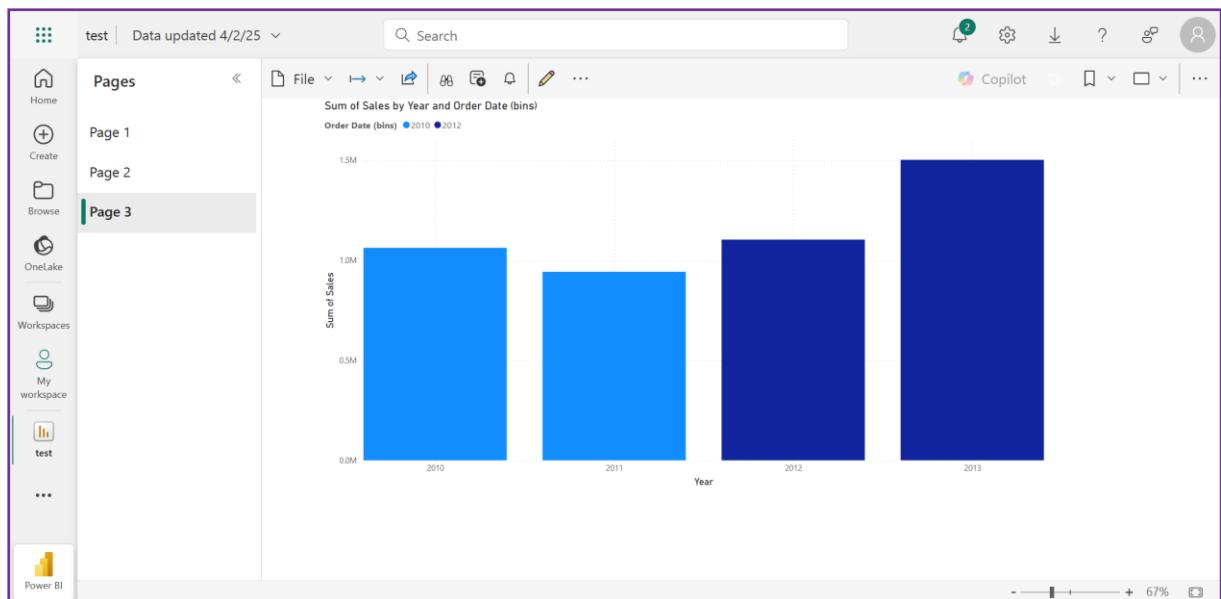
2. If no account exists for the provided **email ID**, you will be prompted to **sign up for a Power BI account** to proceed.



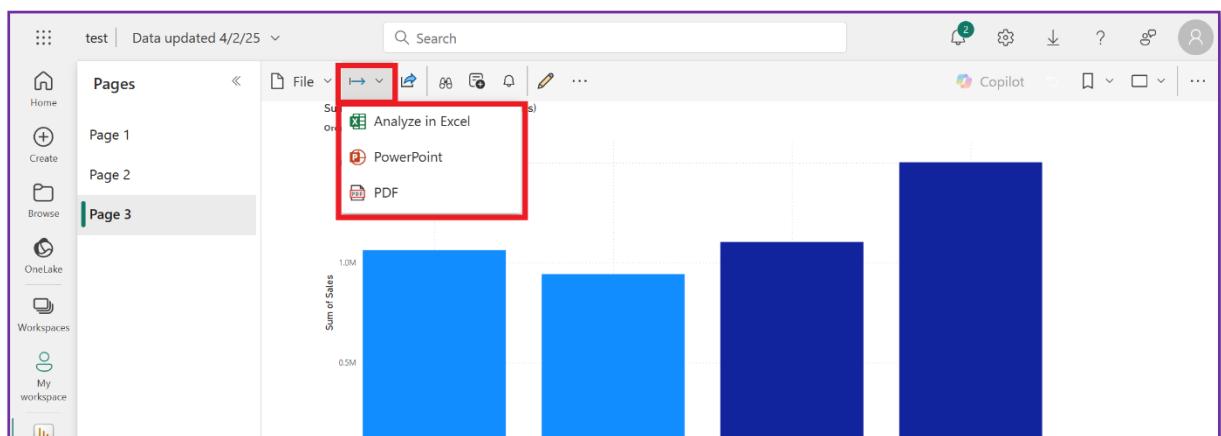
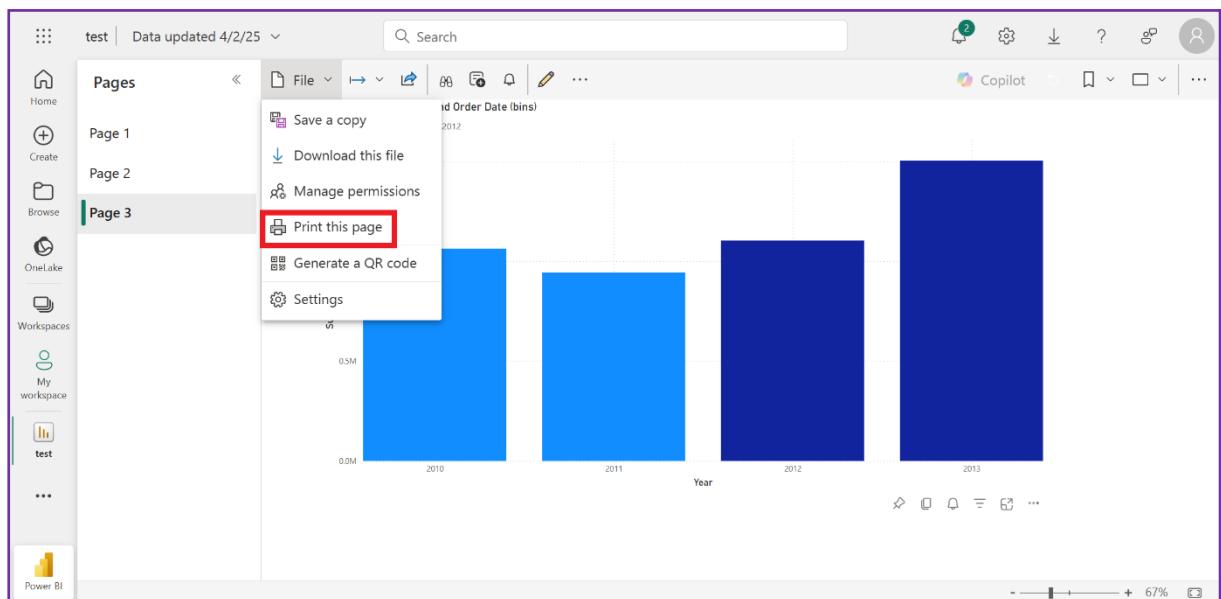
3. After signing in, click on **Publish** to upload the Power BI report to the **Power BI Web App**. Then, go to **Power BI Web** and sign in with your **email ID** to access the report online. Navigate to **My Workspace → Test (Report)** to open the uploaded report file.

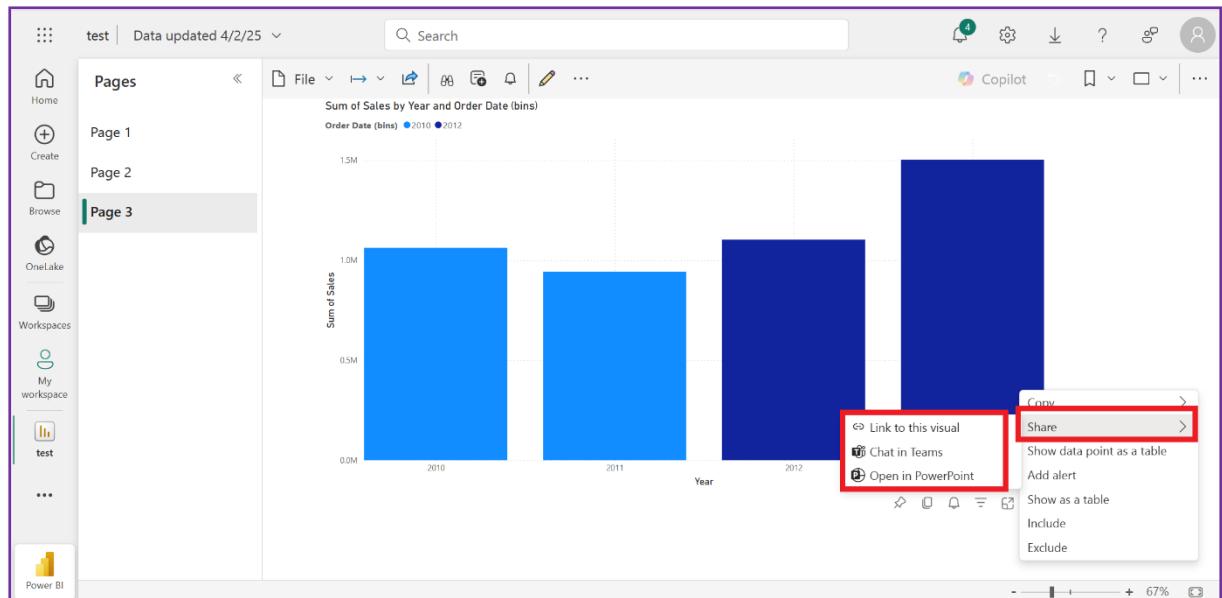
The screenshot shows the Power BI 'My workspace' page. On the left, there's a sidebar with icons for Home, Create, Browse, OneLake, Workspaces, and 'My workspace' (which is highlighted with a red box). The main area is titled 'My workspace' and shows a table of items. The table has columns for Name, Type, Task, Owner, Refreshed, Next refresh, Endorsement, and Sensitivity. There are two items listed: 'test' (Report type) and another 'test' entry (Semantic ... Report type). Both 'test' entries are highlighted with red boxes. At the top, there's a message about choosing from pre-designed task flows or adding a task to build one. The top navigation bar includes 'Power BI My workspace', a search bar, and various settings icons.



- Click on **File → Print this page** to print the selected Power BI page as a PDF. Alternatively, charts and reports can be **exported** to Excel, PowerPoint, or PDF for further use.



5. Right-click on any chart and choose **Share** to copy the link to the visual, share in Microsoft Teams, or open the visual in PowerPoint for further collaboration and presentation.



6. In **Power BI Desktop**, go to **File → Export → Export to PDF** to save the report as a **PDF document** for easy sharing and offline access.

